AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE	OF PAGES
	1	2

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. *(If applicable)*
0005	9 JUL 99		

6. ISSUED BY CODE

US ARMY ENGINEER DISTRICT, FORT WORTH
ATTN: CESWF-CT (RM 2A19)
PO BOX 17300
FORT WORTH, TX 76102-0300

7. ADMINISTERED BY *(If other than Item 6)* CODE

8. NAME AND ADDRESS OF CONTRACTOR *(No., street, county, State and ZIP Code)*

CODE FACILITY CODE

(√) X

9A. AMENDMENT OF SOLICITATION NO.
DACA63-99-R-0008

9B. DATED *(SEE ITEM 11)*
14 MAY 1999

10A. MODIFICATION OF CONTRACTS/ORDER NO.

10B. DATED *(SEE ITEM 13)*

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☒ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended, ☒ is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:

(a) By completing Items 8 and 15, and returning 1 copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA *(If required)*

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

(√)

A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: *(Specify authority)* THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.

B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES *(such as changes in paying office, appropriation date, etc.)* SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).

C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:

D. OTHER *(Specify type of modification and authority)*

E. IMPORTANT: Contractor ☐ is not, ☐ is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION *(Organized by UCF section headings, including solicitation/contract subject matter where feasible.)*

The Solicitation for DESIGN-BUILD CONTRACT FOR CONSTRUCTION OF STANDARD DINING FACILITY, FORT SAM HOUSTON, TEXAS, is amended as follows:

See Continuation Sheet.

NOTE: The due date for receipt of proposals remains "August 2, 1999 by 4:00 pm., as previously announced.

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER *(Type or print)*		16A. NAME AND TITLE OF CONTRACTING OFFICER *(Type or print)*	
15B. CONTRACTOR/OFFEROR *(Signature of person authorized to sign)*	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA BY *(Signature of Contracting Officer)*	16C. DATE SIGNED

Item 14. Continued.

CHANGES TO THE CONTRACT VIEWER

1. Paragraph 6, under "SUBMITTAL REGISTER, DD FORM 1354, GUIDE SPECIFICATION, AND DRAWING FILES" in the NOTES has been changed to read:

“6. [AM#5] Drawing CADD (.dgn and .dwg) files for Attachments K(1) Architectural and K(4) Site drawings are located on the Solicitation CD-ROM disk in folders Drawings / .dgn and Drawings /.dwg. The CADD files provided for the drawings in Attachment K(1) do not meet the CADD standards specified in Section 01016 and are provided for the beneficial use of the offeror in proposal preparation only. The offeror is not required to use these files. The successful offeror will be required to comply with the CADD standards specified in Section 01016 for all design submittals after award.”

CHANGES TO SWD-AEIM

2. The attached “Standard Arrangement of Drawings, sheets VIII-A1 and VIII-A2” has been added to AEIM Chapter 8 Appendix A.

CHANGES TO THE SPECIFICATIONS

3. Replacement Sections - Replace the following section with the accompanying new section of the same number and title, bearing the notation "ACCOMPANYING AMENDMENT NO. 0005 TO SOLICITATION NO. DACA63-99-R-0008:"

01016 DESIGN DOCUMENT REQUIREMENTS

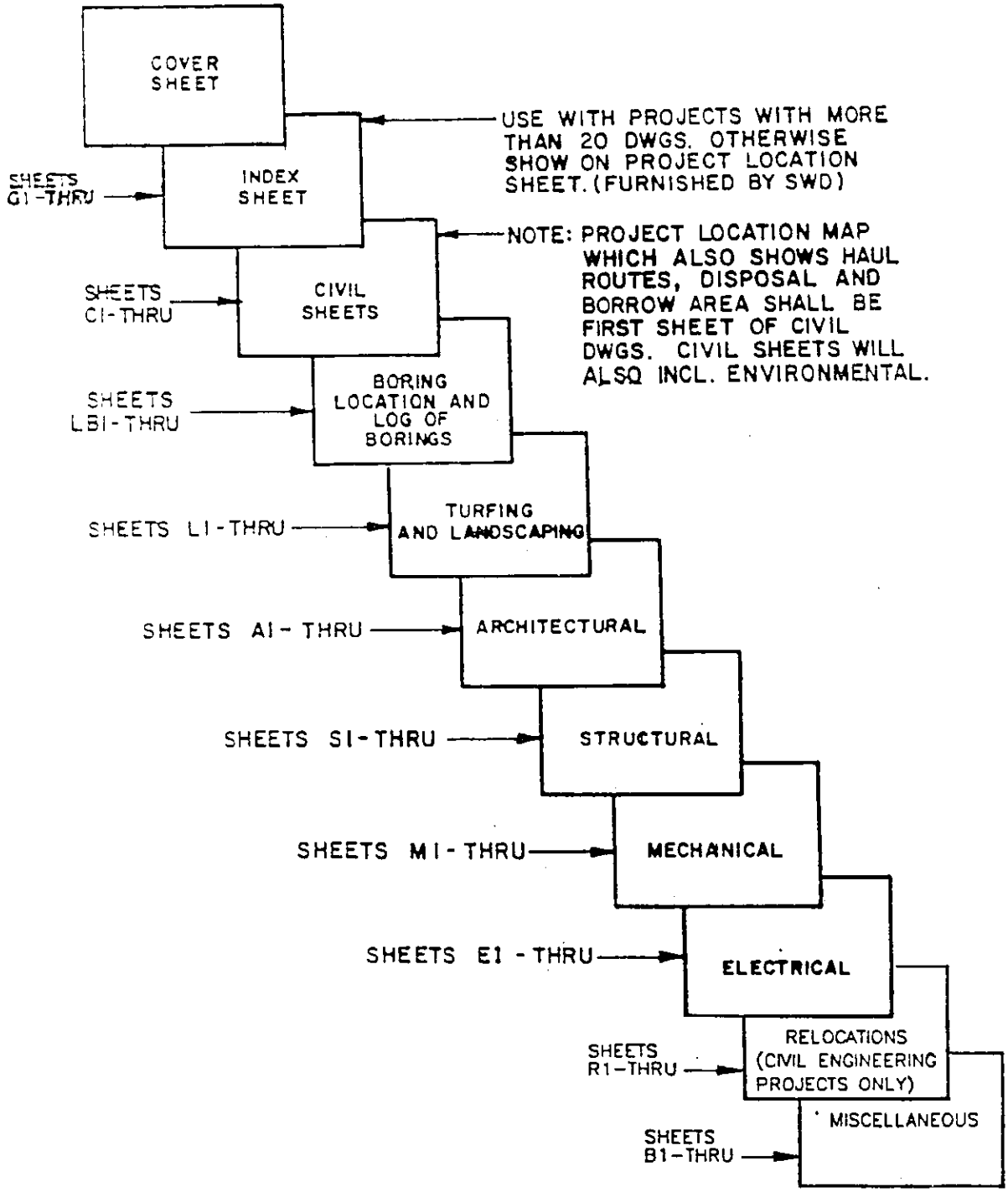
CHANGES TO THE DRAWINGS

4. New Drawings.- The following drawings have been added to the “drawings/dgn” and “drawings/dwg” folders on the solicitation CD-ROM:

A1 FLOOR PLAN
A2 FINISH SCHEDULE AND FINISH FLOOR PLAN
K1 FOOD SERVICE (KITCHEN) EQUIPMENT LAYOUT
K2 ENLARGED KITCHEN PLAN
K3 ENLARGED SERVING AREA PLAN
K4 ENLARGED CARRY-OUT AND DISHWASHING PLANS
K5 FOOD SERVICE (KITCHEN) EQUIPMENT SCHEDULES
K6 FOOD SERVICE (KITCHEN) EQUIPMENT SCHEDULES
K7 CARRY-OUT (KITCHEN) EQUIPMENT SCHEDULES
K8 FOOD SERVICE (KITCHEN) EQUIPMENT DETAILS
K9 FOOD SERVICE (KITCHEN) EQUIPMENT DETAILS
K10 FOOD SERVICE (KITCHEN) EQUIPMENT DETAILS
K11 FOOD SERVICE (KITCHEN) EQUIPMENT DETAILS
K12 POINT OF SALES COUNTER PLAN AND SECTION
K13 DETAILS AT WALK-IN FREEZER (Z) AND REFRIGERATOR (S)
PROJECT LOCATION MAP, ATTACHMENT C-1
NEW SITE PLAN, ATTACHMENT C-2
SITE UTILITY PLAN, ATTACHMENT C-3
BORING LOCATIONS, SHEET LB1
LOGS OF BORINGS, SHEET LB2

END OF AMENDMENT

STANDARD ARRANGEMENT OF DRAWINGS



VIII - A1

Plate No. D1

RANDOLPH AIR FORCE BASE

SAN ANTONIO, TEXAS

PLANS FOR

UNDERGRADUATE NAVIGATOR TRAINING

IN THREE VOLUMES

VOL. III

SOLICITATION NO. DACA63-93-B-0030
DATED: JANUARY 1993

Contact Engineering Manager to obtain solicitation number, construction contract number, and issue date of the solicitation

US Army Corps
of Engineers
Fort Worth District

A-E's Name & LOCATION → JONES ENGINEERING, INC. WACO, TEXAS

CONTR. NO. DACA63-93-C-0056

RANDOLPH A.F.B., TX. UNDERGRADUATE NAVIGATOR TRAINING VOL III SOL NO. 93-B-0030

UNDERGRADUATE NAVIGATOR TRAINING
RANDOLPH A.F.B., TX. SOL NO. 93-B-0030 CONTR. NO. DACA63-93-C-0056

VIII - A2

SECTION 01016

DESIGN DOCUMENT REQUIREMENTS
AMENDMENT NO. 0005

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

MILITARY HANDBOOKS (MIL HDBK)

MIL HDBK 1008C	(10 June 1997) Fire Protection For Facilities Engineering, Design and Construction

1.2 SUBMITTALS

SD-01 Data

Design Data Attachments; FIO.

Submit the Design Data Attachments A, B, and C at the end of this Section with the 50% and 100% design submittals.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 DRAWINGS

Prepare, organize, and present drawings in the format specified. Provide drawings complete, accurate and explicit enough to show compliance with the RFP requirements and to permit construction. Drawings illustrating systems proposed to meet the requirements of the RFP performance specifications shall reflect proper detailing for each such system to assure appropriate use, proper fit, compatibility of components and coordination with the design analysis and specifications required by this section. Coordinate drawings to ensure there are no conflicts between design disciplines and between drawings and specifications. For specific drawing requirements, see paragraphs: 50 PERCENT DESIGN REQUIREMENTS and 100 PERCENT DESIGN REQUIREMENTS. The following subparagraphs cover general drawing requirements.

3.1.1 CADD Drawings

[AM#5] The Contractor shall ensure that all delivered CADD digital files and data (e.g., base files, reference files, cell/block libraries) are compatible with the Government's target CADD system and operating system, which is Bentley Systems MicroStation, version 5 or SE, running on Microsoft Windows 95/NT, and adhere to the standards and requirements specified. The term "compatible" means that data is in native digital format i.e., .dgn, and can be accessed directly by the target CADD system without translation, preprocessing, or postprocessing of the digital data

files. It is the responsibility of the Contractor to ensure this level of compatibility.

[AM#5]

3.1.2 CADD Standards

[AM#5] CADD drawings shall be prepared in accordance with the applicable general and discipline-specific provisions for drawing formats, level/layer assignments, line colors, line weights, and line types of the "Tri-Service A/E/C Standards" and the "SWD Architectural and Engineering Instruction Manual (AEIM), Chapter VIII, "Drafting Standards."

The CADD standards for design of this project is located at the following Web sites:

http://tsc.wes.army.mil/html/standards/aec

[AM#5] Seed/prototype files, containing the Government's preset standard metric settings can be downloaded from the Internet at the following address:

http://www.swf.usace.army.mil/ed/std shts.

Electronic reference files containing the Government's standard metric border/title block sheets can be downloaded from the Internet at the following address:

http://www.usace.army.mil/ed/std shts

The Contractor shall submit a written request for approval of any deviations from the Government's established CADD standards. No deviations will be permitted unless prior written approval of such deviation has been received from the Government.

3.1.3 Size of CADD Drawings

[AM#5] Size of CADD drawings shall be SI AI, 594 mm by 841 mm (23.39 by 33.11 inches), trim to trim, with Government standard metric borders. Full size drawings shall be submitted for all design submittals. Metric (SI) working units _____ shall be used.

3.1.4 Drawing Format

[AM#5] Title block shall include, as a minimum, project title and location, sheet title, and sequence number. At the 50 percent and 100 percent design submittals, each Contractor-prepared drawing shall bear the printed name and signature of the registered architect or appropriate registered engineer responsible for the work portrayed on that drawing and proposed to meet the RFP requirements. For the final submittal, each Contractor-prepared drawing shall bear the stamp or seal and signature of the registered architect or appropriate registered engineer responsible for the work portrayed on that drawing and proposed to meet the RFP requirements.

3.1.5 Drawings Sequence

[AM#5] Arrange drawings by design discipline in accordance with the SWD

Architectural and Engineering Instruction Manual, Chapter 8, Appendix A.

3.1.6 Drawings Required

As a minimum, the construction drawings shall consist of the following:

a. Title Sheet, Index of Drawings (each technical discipline shall have a separate drawing legend sheet located in front of each respective section), Legend, and Abbreviations and Soil Borings

b. Civil Drawings

c. Utility Drawings (Water Supply, Wastewater, Gas, Electrical, Fiber and Communication)

d. Architectural Drawings

e. Interior Design Drawings

f. Structural Drawings

g. Mechanical Drawings

h. Electrical Drawings (including security and fire alarm)

i. Lightning Protection

j. Fire Protection Drawings

k. Environmental Drawings (Identification and removal of hazardous materials from Building 2789, Storm Water Control Details for 2 (two)sites.)

l. Kitchen Equipment Drawings

m. Landscape Architectural Drawings

n. Irrigation Layout Drawings

3.1.7 Legends

Standard material symbols used on the drawings shall be provided as a separate legend drawing located just in front of the drawings in the set. Additional material symbols should be added to the Legend Sheet as needed for the project.

3.1.8 North Arrows

North arrows shall be oriented the same direction on all plan sheets and by all disciplines, including site and civil drawings. Plan north shall be "up" or to the left on the drawings. Indicate true north on composite plan drawings.

3.1.9 Symbols

The standard symbols used for amendments (a triangular box) or contract modifications (a type of circular box, see the chapter on Drafting Criteria) shall not be used for any other purpose, and care must be taken to avoid using even similar appearing but technically different symbols.

3.1.10 Schedules

Schedules shall be clear and complete. Furnish as many columns as necessary to present the essential information. Do not use the "Remarks" column as a substitute for an information column. Normally a single item should be presented on each schedule line. Other scheduling methods as standard with the Architect-Engineer may be used if approved by written authorization from the Contracting Officer.

3.1.11 Notes

Notes may be placed on drawings to reduce the amount of repetitive drafting, provided that clarity is not lost. General notes should be placed at the right-hand edge of the sheet and, if possible, should be located on the first sheet in the set. Notes that pertain to each drawing should be placed on each drawing.

3.1.12 Dimensions

Dimensions shall be complete, accurate, and fully coordinated. Dimensions should be to points easily measurable in the construction, and should be laid out to eliminate refiguring in the field. Dimensions should be tied-in to column lines, etc., to facilitate checking. Plan dimensions for frame construction should be to face of stud (or sheathing) for exterior walls, to one face of stud for interior partitions, and to centerline of openings. For masonry construction, dimensions should be to one or both nominal faces of masonry and to jambs of openings.

3.1.13 Standard Drawings

Standard Drawings, when furnished for site adaptation, will generally be utilized without basic architectural change. Portions of the drawings not pertinent to the project will be deleted. Specific instructions will be given when design changes are required.

3.1.14 Sketches

All sketches presented during the design phase shall be reduced to 216 mm by 280 mm (8-1/2" by 11") and included in the design analysis to document the design options and decisions evaluated during the design process.

3.2 TECHNICAL SPECIFICATIONS

3.2.1 Editing Technical Specifications

The Contractor shall use applicable guide specifications for developing construction specifications. Specification paragraphs and subparagraphs shall not be rewritten to lessen the quality of the original guide specification sections. Only bracketed choices and inapplicable items may be deleted. Designer note numbers and bracketed choices are marked with redline (shading) for removal in corrected 100 percent specifications submittal. The Contractor shall complete the editing of all options in these specifications. Where designer notes are provided, the Contractor shall edit the choice in accordance with the recommendations and guidance of the Notes. The specifications shall clearly identify, where appropriate, the specific products chosen to meet the requirements of the specifications (manufacturers' brand names and model numbers or similar product information). The Contractor shall be responsible for coordinating

references, along with the RFP requirements, to specific specification sections (number and title) within the project specifications. Section references (title and number) shall be revised to reflect the titles and numbers of specification sections used. See additional requirements in paragraphs: 50 PERCENT DESIGN REQUIREMENTS and 100 PERCENT DESIGN REQUIREMENTS.

3.2.1.1 Additions

If the Technical Specifications do not cover a feature that is in the project, new sentences and/or paragraphs shall be inserted in the proper locations to adequately cover the feature of work. Additions shall not lesson the quality of materials indicated by the specifications. If a new material is added, it shall be properly referenced in "REFERENCES," "MATERIALS," "SUBMITTALS," "TESTS," and "INSTALLATION" paragraphs, as applicable.

3.2.1.2 Deletion of Inapplicable Text Material

Delete all inapplicable text material to tailor the specifications to fit the project. After deletion has been made of all inapplicable paragraphs, subparagraphs, choices, and schedules from the body of the guide specifications (including but not limited to the correction of lists in "SUBMITTALS," "TESTS," and "INSTALLATION" paragraphs), delete all nonapplicable references listed in the preceding "REFERENCES" and "MATERIALS" paragraphs.

3.2.1.3 References to Specification Sections

The Contractor shall be responsible for coordinating references, along with the RFP requirements, to specific specification sections (number and title) within the project specifications. Section references (title and number) shall be revised to reflect the titles and numbers of specification sections used.

3.2.1.4 Submittals

The Contractor is responsible for all submittals. See Section 01330 CONSTRUCTION SUBMITTAL PROCEDURES for the definition of Government Approved and For Information Only submittals. All submittals shall be "FI0" unless otherwise specified. Submittals noted in the CEGS guides as "GA" shall be changed to "FIO".

3.2.2 Commercially Available Guide Specifications

For items of work not covered by the CEGS guide specifications, the Contractor may develop specifications utilizing commercially available construction guide specifications such as "SpecText" published by The Construction Specifications Institute and "MasterSpec" published by The American Institute of Architects. These must be converted to CEGS format to be compatible with the Corps of Engineers Resident Management System (RMS) and the Specsintact Guide Specification and Submittal Register System. The CEGS format is specified in CEGS guide specifications CEGS-01010 CEGS ORGANIZATION GUIDANCE and CEGS-01020 CEGS TEMPLATE. Commercially available guide specifications must be converted to the CEGS format in order to develop the submittal register. Use Wordspec to convert the sections to Specsintact SISGML to produce the sections' submittal registers. References to the "Architect/Engineer" and the "Owner" shall be changed to refer to the "Government" or "Contracting Officer" as

appropriate.

3.2.3 Division 1 Sections

Include Division 1 specifications sections contained in the RFP as part of the project specifications without change.

3.2.4 FORMAT FOR PROJECT SPECIFICATIONS

Submit the project specifications, including cover page and Table of Contents, printed with a word processor using the Corps of Engineers Specsintact with SGML, Version 2.8.6 or higher, software. DO NOT submit sections that were created as straight MSWord documents. The use of the Wordspec Macro and Specsintact are compatible with MS Word and will produce the submittal register. Use Microsoft Word for Windows, Version 6.0 or higher and the Wordspec Macro to convert the sections to MS Word documents for those users who are specified to receive MS Word copies of the specifications.

The Corps of Engineers Specsintact and the Wordspec macro software can be downloaded from the Internet at the following address:

http://kscdl2.ksc.nasa.gov/specsintact/.

The Corps of Engineers CEGS guide specifications (SI SGML format) and the Lighting Fixture Standard Drawing 40-06-04 Details can be downloaded from the Internet at the following address:

http://www.hnd.usace.army.mil/techinfo/index.htm.

The guides can only be downloaded in *.zip files. PKZIP software will be required to unzip them into working files.

Specsintact software and the CEGS guide specifications can also be obtained from the current version of the Construction Criteria Base (CCB) CD issued by the National Institute of Building Sciences (NIBS), telephone number 202/289-7800, fax number 202-289-1092, internet address is:

http://www.nibs.org.

Fort Worth District guide specifications and the District supplements to the CEGS guide specifications can be obtained from the Fort Worth District upon request and will be on the solicitation CD-ROM disk.

Print hard copies using laser printer and good quality white bond paper (75 g/m^2(20 pound Copier/Laser/Fax/Inkjet/Offset type), 215 mm by 279 mm (8 1/2 by 11 inch) in size. For the 50 percent and 100 percent design submittals, editing of the Technical Specifications shall be shown by using redlining (shaded text) for text insertions and strikeouts for text deletions. The corrected 100 percent specifications with review comments incorporated shall be cleaned up (markings for insertion and deletion removed) and submitted in both hard copy and on magnetic media (CD-ROM disk). Carbon copies are not acceptable.

3.2.4.1 Format

Format shall match that used by the CEGS guide specifications.

3.2.4.2 Cover Page

The Cover page shall be similar to the RFP Cover page and shall include:

a. Project title, activity and location

b. Construction contract number

c. Construction Contractor's name and address

d. Design firm's name and address

e. Names of design team members responsible for each Contractor prepared technical discipline of the project specification

f. Name and signature of a Principal of the design firm

g. The Table of Contents shall list the 16 Divisions contained in CSI format and the specification section umbers and titles contained in the project specification.

3.2.5 Construction Submittals

All construction submittals shall be in accordance with Section 01330, " CONSTRUCTION SUBMITTAL PROCEDURES."

3.3 DESIGN ANALYSES

Prepare design analyses (basis of design and calculations) for each design discipline. Specific requirements relative to the technical content to be provided are specified in the paragraphs for 50 and 100 percent design requirements. The design analyses shall be a presentation of facts to demonstrate that the concept of the project is fully understood and that the design is based on sound engineering. The design analysis for each discipline shall include, as a minimum:

a. A basis of design consisting of:

(1) An introductory description of the project concept which addresses the salient points of the design;

(2) An orderly and comprehensive documentation of criteria, rationale, assumptions and reasoning for system selection.

b. Calculations required by the specifications sections to support the design.

All sketches presented during the design phase shall be reduced to 216 mm by 280 mm (8-1/2" by 11") and included in this design analysis to document the design options and decisions evaluated during the design process.

3.3.1 Format

The design analysis shall include:

a. a cover page indicating:

(1) the stage of design ("PRELIMINARY DESIGN ANALYSIS" for 50 percent design submittal and "FINAL DESIGN ANALYSIS" for 100 percent design submittal).

(2) the project title and location,

(3) who prepared the design analysis ("Prepared By:" followed by Name of the Contractor and the Contractor's AE, and the locations of the AE and the Contractor's Office(s) involved with the design),

(4) construction contract number; and

(5) the volume number and total number of volumes for the project.

b. table of contents; and

c. tabbed separations for each part of design analysis for quick reference.

Provide a cover sheet for each volume. Submit design analyses prepared on 21 5 mm by 279 mm (8 1/2 by 11 inch) white bond paper. The design analysis for all disciplines shall be bound in one volume, excluding calculations. Multiple volumes for individual disciplines, appropriately numbered, may be provided when required. Organize the design analysis narrative into the following parts, as follows:

3.3.1.1 General Description

This part will provide statements of purpose, authority and applicable criteria. A description of the project and a summary of the economic factors influencing the choice of the architectural, structural, mechanical, electrical, fire safety, water supply and wastewater disposal systems used in the project shall be provided along with an indication of how initial and life costs were considered.

a. Purpose

Include the project description contained in the Contract Summary on the Contract Award CD-ROM disk.

b. Authority

Provide the following authorization statement under the heading "AUTHORITY" for the project:

"The preparation of design documents was authorized for this project by the Contract Notice to Proceed dated _____ for Contract No. DACA63-99-C-00__."

c. Applicable Criteria

Provide a list of the general criteria that pertains to all disciplines

used in the design. Specific criteria used in a particular engineering /architectural discipline shall be listed in the text of the appropriate discipline in Part 2 of the design analysis. Such criteria shall be referenced accordingly.

d. Project Description

Provide a description of the project and summary of economic factors influencing the choice of materials and systems used in the project.

3.3.1.2 Design Requirements and Provisions

This part of the design analysis shall provide statements of factors considered and provided in the design along with supporting justification of design decisions and design calculations. Include narratives for each of the following areas. See paragraphs: 50 PERCENT DESIGN REQUIREMENTS and 100 PERCENT DESIGN REQUIREMENTS for specific requirements.

a. Civil

b. Landscaping

c. Architectural

d. Interior Design

e. Structural

f. Mechanical

f. Plumbing

g. Electrical

i. Fire Protection

j. Environmental

k. Kitchen Equipment

3.3.2 Calculations

All calculations shall be placed in separate appendix volume(s). Calculations shall include a cover page similar to the design analysis narrative cover page, a table of contents, index page and a summary of criteria for each appendix on the first pages and the project title, and location identified on every page of the calculations. All calculation pages shall be clearly legible and photo-ready. Each discipline which requires calculations shall be consecutively numbered (Example: A-1, A-2, A-3 etc. for Water Supply and Wastewater Calculations and B-1, B-2, B-3, etc. for Structural Calculations) and the date. Cite criteria from which the calculations, rationale, and formulas are extracted by publication number, title, edition and page number. The cover page and each page of calculations shall also include the names of the persons originating and checking the calculations. The person checking the calculations shall be a registered professional engineer other than the originator. In addition, the signature and seal of the appropriate registered professional engineer responsible for the work shall appear on the cover page of the calculations for each discipline. Each appendix index page shall list subtopics (e.g.

for Structural - Loads, Materials, References, Wind Analysis, Footing Design, Wall Design, Column Design, etc.) with pages numbers where each of these subtopics can be found in the calculations. Computer printouts shall be consecutively page numbered and identified similar to the calculations. Identify the computer program name, source, and version. All schematic models used for computer input shall be provided.

3.4 COMMON DESIGN DEFICIENCIES

The work involved in making corrections due to common deficiencies becomes lost effort and time for both the designer and the reviewer. Carefully compare the design and contract documents with all requirements at several points in the design process to avoid unnecessary changes at a later date. Some of the requirements which are most often overlooked include:

a. Requirements of the COE 2, Southwestern Division's ARCHITECTURAL AND ENGINEERING INSTRUCTIONS MANUAL (SWD-AEIM) have been repeatedly overlooked in the past.

b. Failure to incorporate the Fort Worth District's supplemental local requirements to the CEGS guide specifications.

c. Not using correct abbreviations or terminology on the drawings. Abbreviations must match what is used on the standard abbreviation sheet and terminology must match what is used in the standard technical guide specifications.

d. Not using the correct scales, north arrow designation, section cut system, or incomplete dimensioning on the drawings.

e. Not providing sufficient space for door operation hardware at doors which swing into a wall running perpendicular to the opening. 100 mm minimum is required between edge of door frame and perpendicular walls.

f. Not providing correct and complete Design Analysis information written in the present tense. The Design Analysis will be written following the format indicated herein. A separate Fire Protection section in the Design Analysis with input from all disciplines is one area which is often overlooked and shall be included.

g. Not correctly presenting or coordinating (to avoid interference) features of Fire Protection, Noise Control, and Physical Security.

h. Not correctly referencing and cross referencing building sections, wall sections, details, etc.

i. Failure to read and use technical notes in editing the Technical Guide Specifications.

j. Failure to coordinate all disciplines prior to submittal of projects for review.

k. Improper use of fire-retardant wood. Fire-retardant wood is combustible; its use in buildings that are of noncombustible construction is extremely limited (see UBC for the minor allowable uses). Because of the potential for severe degradation, fire retardant plywood shall not be used in a roof or roofing system, or in structural applications.

l. Incorrectly listing trade names in door hardware specifications in

lieu of ANSI numbers and failure to correctly specify hardware finishes.

m. Control joints in CMU walls and brick expansion joints in face brick are not shown on both architectural plans, elevations and structural plans, or are inconsistent. Note also control joint locating and coordination for floor tile per Tile Council of America recommendations.

n. Failure to delete all publications which do not apply to the particular project.

o. North is not oriented the same direction on all sheets (civil, site, arch).

p. Failure to use the latest edition (at time of Contract award) of applicable criteria unless a specific edition is specified.

3.5 DESIGN CERTIFICATION

The Contractor shall provide certification for each design submittal in accordance with paragraph SUBMISSION OF CONSTRUCTION DRAWINGS, SPECIFICATIONS AND DESIGN ANALYSES, subparagraph "Certifications," of Section 01015 DESIGN REQUIREMENTS AFTER AWARD.

3.6 50 PERCENT DESIGN REQUIREMENTS

Submit the following:

3.6.1 Rendering

The Contractor shall prepare an architectural rendering for inclusion with the 50 percent Design Submittal. The rendering will be in full color, represent the final exterior color and material selections, approximate size 500 mm by 600 mm, on illustration board, matted and framed with non-glare glass, and with project title on mat. The perspective shall be from an eye-level or low-level aerial point of view that will highlight the most attractive features of the project. The Contractor shall furnish one preliminary black-and-white sketch of the proposed rendering to the Contracting Officer, along with three (3) proposed exterior color schemes, for review and acceptance prior to proceeding with the color version.

3.6.2 Drawings

Furnish all drawings that are required for the 100 percent submittal. Except for site work, outside utilities, and structural drawings, all drawings shall be developed to approximately 50 percent completion. Site work, outside utilities, structural drawings, and kitchen equipment drawings shall be 100 percent complete.

3.6.3 Specifications

All specification sections required for 100 percent submittal. Specifications for site work, utilities, structural, and Food Service (Kitchen) Equipment (Division 2 and those applicable in Divisions 3, 4, 5, 11, 15, and 16) shall be 100 percent complete. All other specifications required for the completion of the building, turfing, and landscaping shall be at least mark-ups of the required technical sections and trade sections. Include the identification of the "author" of any industry standard guide

specifications used, any mandatory guide specifications required in Division 3 ATTACHMENTS, and a table of contents listing all sections to be included in the project.

3.6.4 Submittal Register

Prepare a Submittal Register using ENG Form 4288 "Submittal Register" as specified in Section 01330 CONSTRUCTION SUBMITTAL PROCEDURES. Submittals for site work, utilities, and building structure shall be 100 percent complete. Submittals for all other work shall be developed to the extent required to support the level of design included in this submittal.

Use the Corps of Engineers' Specsintact software to produce the submittal register. Section format must follow the format shown in Corps of Engineers guide specification CEGS-01020 CEGS TEMPLATE.

3.6.4 CIVIL

The drawings shall be complete, include all necessary and required details, thoroughly checked, and fully coordinated with the technical Specifications and all other Construction Documents. Removal work and details should be shown on separate drawings. The contract drawings shall fully describe the type and the scope of work required. The layout of individual sheets and the organization of the assembled set shall follow and communicate a logical sequence. General information shall be presented first, progressing to more detailed information. When assembling details, begin in the upper left-hand corner of the sheet with letters progressing to the right and down. When dimensioning, use arrowheads, not dots or slashes. The drawings shall include the following as a minimum:

Cover Sheet and index of drawings
Location and vicinity map including haul routes
Site demolition plan (if required)
Site plan and details
Grading and drainage plan
Utility plan with profiles and details
Pavement plan and details
Soils boring logs
Landscaping plans and details

3.6.4.1 Drawings

3.6.4.1.# Location Plan and Vicinity Map

A Vicinity Map consists of a small scale drawing of the project location, similar to a road map. A Location Plan consists of a small scale drawing showing the Government property or reservation limit with the construction project site shown. The drawing shall show the facility approved Contractor Access and Haul Routes load limits on any bridges along haul routes, and the designated waste and/or borrow areas. Upon request, a reproducible base sheet will be provided by the Fort Worth District for the Contractor's use in preparing the Location Plan.

3.6.4.1.# Site Demolition Drawings (Removal Plan)

New work and removal work should be shown on separate drawings. The type and the scope of removal work intended shall be clear from an inspection of the documents. Keyed notes for removal will be allowed.

The removal plan will show the existing physical features and condition of the site before construction. This information should include the field survey to show all above and below ground utilities; buildings, drives, roads and parking areas, walks, and vegetation; and such facilities as retaining walls, underground storage tanks, foundations, existing contours, etc. Each physical feature to be removed shall be as indicated on the standard legend sheet, a legend on the removal plan, and properly noted: to be removed, to remain, or to be relocated.

3.6.4.1.# Site Plan

The Site Plan shall show all the site layout information necessary to field locate the building, walks, parking lots, and all other appurtenances to be constructed on the project. All site related work to be constructed will be located by dimensions. The Site Plan will identify all site related items such as: curbs, pavements, walks, courtyards, bollards, trash enclosures, retaining walls, etc. in accordance with a standard legend sheet or with additional legends or notes. Site Plans shall be at a scale of 1:400, 1:500, or 1:600 (1" = 20' or 1" = 30'). No existing or proposed contours shall be shown on this Plan. The Site Plan, prior to adding the dimensions, should serve as the base sheet to the other Plans, such as the Utilities Plan, Grading and Drainage Plans and the Landscape Plan. The Site Plan will show all existing physical features and utilities within and adjacent to the work site that will remain after the proposed construction has been completed. This plan will also show any free zones, construction limits, and storage areas etc. Whenever the Site Plan occupies more than one sheet of drawings, a Key Plan shall be included. Additional plans showing specific areas of the site in smaller scales can be included if more detail is necessary.

Show the building orientation and horizontal dimensional relationships to streets, walks, property lines, easements, fences and other structures. Space between structures will provide open areas in accordance with good land-use planning and due consideration of future development plans. Fire clearance separations will be maintained for access for equipment acceptable to the installation (Fire Chief). Show geometric features of all roads, streets, sidewalks and parking areas. Provide details of all site features.

3.6.4.1.# Grading and Drainage Plan

Provide a preliminary grading and drainage plan at a scale of 1:400, 1:500, or 1:600 (1" = 20' or 1" = 30'). Indicate tentative new and existing grading contours at 305 mm (1-foot) contour intervals. Provide spot elevations in sufficient numbers so that interpolation between contours is not required. Some examples are: corners of paved areas and parking lots, low points, high points, flow lines of ditches and swales, changes in degree of slope and grading at building corners to insure positive drainage from the facility.

Indicate finished floor elevation of new building(s). It shall be a minimum of 300 mm above the highest point of the outside finished grade. Grade contours shall be at 250 mm intervals and spot elevations shall be provided at all site development features.

Show layout of the new and existing storm drainage systems, including existing and new storm drainage flows, ditches, swales and piped systems.

Provide the appropriate top of structure elevations and pipe invert

elevations of both the new and existing drainage system.

3.6.4.1.# Erosion Control Plans

Erosion control plans shall show locations of all sediment basins, diversion ditches, areas to receive rock blanket, and other erosion control structures, indicating the approximate drainage areas each will serve. Indicate the materials, construction and capacity of each structure.

3.6.4.1.# Composite Utilities Plan With Profiles And Details

Provide a Composite Utilities Plan at a scale of 1:400, 1:500, or 1:600 (1" = 20' or 1" = 30'). Tentative new and existing utilities shall be indicated. Plans shall show layout of the new and existing storm drainage, gas, sanitary sewer, fire protection, electrical, communication, water, steam, and any other utility systems which need to be provided for. Include new and existing contours. Show mains and distribution lines as well as all appurtenances such as meters, manholes, and valves.

3.6.4.1.# Grading Sections

Grading sections through the new building showing finished and existing grades may be provided to supplement the required grading plan.

3.6.4.1.# Pavement plan and details

Provide pavement plans for all parking lots, roads, equipment pads and sidewalks. Include cross sections of all paving designs and include details of curbs, gutters, pads, sidewalks, stairs, inlets and other features.

3.6.4.1.# Soils boring logs

Provide all logs of soil borings provided by the geotechnical engineer.

3.6.4.1.# Specifications

The technical specifications shall be complete, fully coordinated with the drawings, and include all civil work. Special sections shall be prepared to cover those subjects for which no pattern guide specification is available. Notes to the Designer that accompany specifications shall be used in editing technical guide specifications. All specification indexes shall be completely edited to reflect the paragraphs retained in the body of the specification. All references that have not been used in the body of the specification shall be edited from the guide. These specifications shall be in final form for construction.

3.6.4.1.# Design Analysis Narrative

Design analysis shall include the following:

a. References: Design references used in preparing the civil design.

b. Grading: A narrative of the grading design and criteria used.

c. Drainage: A narrative of the drainage design and criteria used. Include information on the storm drain pipe materials selected and their ability to withstand earth dead loads and live loads that will be imposed.

The Design Analysis should give the basis for the site design and should establish specific goals, objectives and priorities for site design of the project. Identify, explain and document use of design criteria and how the design meets goals, objectives and priorities. Identify the preferred site development concept. Document pollution prevention measures and other environmental considerations made during design.

3.6.4.1.# Design Analysis Calculations.

Storm Drainage System Calculations shall include the following:

a. Drainage area map showing boundaries of each drainage area and respective drain inlet or culvert.

b. Storm run-off calculations for each drainage area.

c. Preliminary storm drain pipe sizing calculations.

3.6.5 LANDSCAPE

3.6.5.1 Landscape Plan

A Landscape Plan showing trees, shrubs, ground covers, seeded and sodded areas, shall be prepared. The Landscape Plan shall be prepared by a Licensed Landscape Architect. The Contractor shall specify types of plant materials that are locally grown, commercially available and acclimated to the project environment. The Landscape Plan shall include a plant materials schedule or listing. This schedule shall include botanical names, common names, key, size and the method of transplanting. The Landscape Plan shall also show all unsurfaced ground areas disturbed by construction within the project limits with these areas shown to be seeded, sodded, or mulched as required.

3.6.5.2 Landscape Details

The Contractor shall provide designs and details as necessary for required site furnishings and accessories.

All the above mentioned design requirements shall be provided for both the parking areas mentioned in SECTION 02700 Building Sitework. The northern parking area as described in this section, as Bid Option #1, shall be a construction bid option. This parking area may or may not be constructed due to funds restraints

3.6.6 ARCHITECTURAL

3.6.6.1 Drawings

50 percent architectural drawing submittal shall be a complete set of architectural drawings without large scale details. All other drawings shall be complete except referencing of the large scale details.

3.6.6.1.# Removal (Demolition)Drawings - Plans and Elevations

New work and demolition work should be shown on separate drawings. The type and the scope of removal work intended shall be clear from an inspection of the documents. Keyed notes for removal will be allowed.

3.6.6.1.# Floor Plans

Provide a double line Composite Floor Plan of the entire building, drawn at the largest scale practicable to include the entire building or floor level on a single sheet. The building may be of a size that will require the floor plans to be divided into multiple areas. See paragraph on Drawing Scales for plan scale requirements. Floor plans shall essentially be complete with the exception of large scale detail referencing. Floor plans shall be scaled double-line drawings showing the functional arrangement, material patterns, location of all openings and plumbing fixtures, all section cuts, wall types, all notes and leaders, all general notes, and all dimensions shall be completed. The plans shall indicate door swings, door numbers and window type; door and window schedules are required. A north arrow shall be shown on each floor plan. Enlarged toilet plans shall also be included. The first composite plan sheet shall include a gross area tabulation comparing the actual square footage with the authorized square footage of the facility. Architect-Engineer suggestions for plan improvement shall be fully shown and justified. Include:

Overall, Control, Opening, and complete dimensioning
Match Lines for combining individual portions of floor plans
Room Names and Numbers
Structural Column or Bay Indicators
Wall and Building section cuts
Door Swings and Numbers
Window Types
Square Footage
General Notes

When dimensioning, use slashes. Where major structural elements are included as parts of architectural detailing, do not indicate sizes. These elements should all be fully defined as part of the structural design documents. Major elements of mechanical and electrical equipment affecting space allocation, shall be shown on the architectural plan to the extent practicable and coordinated with other respective disciplines. When applicable, Government-furnished, Contractor-installed, or Government-furnished and installed items shall be shown as a dashed line.

3.6.6.1.# Reflected Ceiling Plans

Reflected ceiling plans shall be completed including all notes, complete legends and pocheing patterns of all materials to be used. Reflected Ceiling Plans shall be provided for all spaces in the building. Reflected ceiling plans shall show the ceiling tile layout and location of gypsum wallboard and other ceiling types where applicable. All light fixtures, air diffusers, grilles, registers, exit lights, public address speakers, fire alarm strobe lights, sprinkler head layout, ceiling mounted equipment access panels or removable ceiling tile and grid elements, smoke and heat detectors, wall fire ratings, ceiling mounted equipment removal pathways, ceiling mounted television mounts, and other ceiling mounted items will also be shown on the reflected ceiling plans. The fixtures and other equipment shall be laid out in a regular pattern symmetrical with the ceiling tile grid, or symmetrical with the room centerlines, columns, windows, or other feature that dominates. All ceiling mounted items shown shall be fully coordinated with all other disciplines.

3.6.6.1.# Roof Plan

Composite and larger area roof plan shall be complete including all notes,

legends, slope indications, and roof and overflow drains. All elements located on the roof shall be coordinated with all disciplines. See paragraph on Drawing Scales for roof plan scale requirements.

3.6.6.1.# Building Elevations

Provide all building elevations complete showing the appearance and architectural treatment. Elevations shall be dimensioned to show total height and relation to grade. Critical elevations such as top of finish floor, top of steel, etc. shall be indicated. All notes for materials shall be included. See paragraph on Drawing Scales for Exterior Building Elevation scale requirements.

3.6.6.1.# Building Sections

Building cross section and longitudinal sections shall be included to show general interior volumes, framing method, relationship to adjacent structures, and height of ceilings and partitions. Identify materials used and necessary dimensions. See paragraph on Drawing Scales for Building Section scale requirements.

3.6.6.1.# Wall Sections

Drawings shall include all wall section conditions and dimensions with all materials labeled. The sections should normally be cut through doors, windows, and other critical wall section locations. Wall sections shall not be broken. Additional details shall be included when necessary to illustrate abutting adjacent buildings and important or unusual features. All horizontal dimensions shall occur on the plans and vertical dimensions on the sections and elevations. See paragraph on Drawing Scales for Wall Section scale requirements.

3.6.6.1.# Room Finish Schedules

Room finish schedule shall be complete. Include signage.

3.6.6.1.# Door, Window, and Louver Schedules

Door schedule shall be complete including door and frame types, except referencing to door details and hardware sets. Window and louver schedules shall be complete including window and louver types except referencing to details.

3.6.6.1.# Fire Ratings

Wall ratings and fire hazards shall be clearly indicated as required by the National Fire Protection Association Codes (NFPA). See Military Handbook MIL HDBK 1008C, particularly Section 2.1 Basic Criteria and Section 2.1.2 Partitions. In addition to the wall rating criteria required by the Codes, provide a minimum of one-hour rated wall assembly around all Janitors Closets, Store Rooms, Mechanical and Electrical Rooms or Closets.

Wall fire ratings shall be graphically shown by a continuous symbol or pattern within the wall on the reflected ceiling plan and/or on a Fire Protection/Life Safety Plan. When other functions coexist with the fire protection functions, their integration shall be clearly indicated with an analysis that describes how both functions will be served. Provide a separate, composite type floor plan which makes an accurate presentation of these various features and functions. By authorized written permission, where the building and features being shown are unusually simple, this

information may be included on other drawings. Rated wall details shall include the design number of the testing laboratory certifying the rating.

3.6.6.1.# Drawing Scales

Architectural work shall be drawn at the scales listed below. Other scales may be used only by written authorization through the Contracting Officer. All disciplines should use the same scale for plan sheets.

	METRIC (SI)
Composite Plans (Note 1)	Varies
Floor Plans	1:100
Reflected Ceiling Plans	1:100
Detail Plans (Note 2)	1:20
Roof Plans 1:100	
Exterior Elevations	Same scale as plan
Interior Elevations	1:50 min
Interior Toilet Elevations	1:20
Building Cross Sections	1:50
Wall Sections (Note 3)	1:10
Details (Note 2)	1:5
Wall Types	1:5

Notes:

1. Scale of composite plan shall be as required so that the entire facility is drawn on one sheet without break lines.

2. The goal of this requirement is that the details be large enough to show all fixtures, accessories, equipment, materials, manner of construction, clearances required for proper maintenance, and complete dimensions. Toilet rooms and Equipment rooms are examples of the kind of spaces which shall be drawn as a Detail Plan. All details containing sheet metal flashing shall be 1:5.

3. May be 1:20 if pertinent details are shown at larger scale.

3.6.6.1.# Modular Design

Modular Design practices shall be followed in the design of all masonry buildings or components of buildings. Dimensions shall be figured to whole or half-unit lengths (in increments of 100 mm) in order to reduce on-site cutting of masonry. Units less than 100 mm long shall be avoided.

3.6.6.1.# Symbols

The Room and Door Numbering system shall be consistent for all buildings designed under any one contract. Room numbering shall start at the main entrance and proceed clockwise around functional areas.

3.6.6.1.# Schedules

Schedules for room finish, doors, windows, louvers, etc., shall be clear and complete. As many columns as necessary should be provided in order to present the essential information. The "Remarks" column should not be used as a substitute for an information column. Normally a single item should be presented on each schedule line.

3.6.6.1.# Dimensions

Dimensions must be complete, accurate and fully coordinated. Dimensions should be to points easily measurable in the construction, and should be laid out to eliminate refiguring in the field. Dimensions should be tied-in to column lines, etc., to facilitate checking. Plan dimensions for frame construction should be to face of stud (or sheathing) for exterior walls, to one face of stud for interior partitions, and to centerline of openings. For masonry construction, dimensions should be to one or both nominal faces of masonry and to jambs of openings.

3.6.6.1.# Facility Elevation

The elevation of the first floor shall be indicated as 100 000 mm and shall be a minimum of 300 mm above finish grade. Elevation for other floors, footings, etc., shall be related to this figure. Sea level elevations shall not be shown on the building drawings. Elevations of the first floor above sea level are shown on the grading plan (Civil).

3.6.6.1.# Access to Utilities

All utilities within the building, such as piping, ductwork, electrical work, etc., shall be concealed in finished areas. Provide plumbing chases in toilet areas. The clear space above ceilings and the size of chases must be carefully figured to accommodate piping slopes and connections, ductwork crossovers, and fittings, HVAC piping and valve service spaces, and similar situations. Access must be provided to valves, cleanouts, etc. Space provided for utilities systems must be adequate but should not be excessive.

3.6.6.2 Specifications

Coordinate the specifications with the drawings. Provide a list of specifications which will be utilized for the project and complete edited copies of special sections that cover those subjects which are not covered by CEGS guide specifications.

3.6.6.3 Design Analysis Narrative

The Design Analysis shall be essentially complete with emphasis on the following:

a. A statement indicating the basic criteria to be applied to the design including type of construction (noncombustible, etc.), category of construction (permanent, etc.), major fire protection and exit requirements, etc.

b. A description of materials for all major building components and of all interior and exterior finishes. The description of materials must include type of exterior wall construction, room finish schedule, window types, panel materials, etc. The description of finishes may be presented in schedule form.

c. A list of items on which additional criteria, clarification, or guidance is required.

d. The written presentation must include the designer's reasons for selecting specific materials, architectural compatibility, and architectural treatment in all cases in which the reason for selection is not obvious.

e. Site adaptation of standard drawings shall include the following in the design analysis:

(1) An outline of the selections made where the standards permit the designer a choice of design or material.

(2) An outline of items on the standard that do not conform to current criteria or to the design instructions, and suggested methods for changing the standards.

(3) An outline of errors found in the standards and suggested methods for correction.

(4) An outline of improvements the designer feels should be made to the standards, with full explanation and justification.

3.6.6.3.# General Parameters

The design analysis shall follow the format described herein and include the following:

a. The purposes, overall functions, and total capacities of the facility.

b. The design theme or visual appearance of the exterior and interiors of the building, and how this facility coordinates with the image criteria of the installation on which it will be constructed.

c. The number of personnel to use facility.

d. The type of activities and equipment involved.

e. The anticipated life of the functions to be accommodated.

f. The category of construction; permanent.

g. Functional and RFP requirements

h. Functional areas, occupant capacities, and allocation, including a functional relationship matrix.

i. All items of equipment, required.

j. Occupational safety and health.

k. Handicapped accessibility.

l. Energy conservation energy budget goals.

m. Sound and vibration control.

n. Interior service areas.

p. Physical security; lock and keying, intrusion-detection, alarms, restricted access areas, interior guard support, and ties to local authorities.

o. Justification for selection of exterior and interior finishes and materials.

p. Moisture vapor control.

r. Lessons learned incorporated into the design.

3.6.6.3.# Design Objectives and Provisions

a. Adaptation of the building to the size, shape, and orientation of the site.

b. Building layout to establish convenient circulation flows during normal operation and emergency evacuation activities, for materials, equipment, services, and people.

c. Grouping spaces into sound-compatible zones and protective construction zones, e.g., for fire and storm.

d. Space layout compatible with modular (structural and environmental) support systems.

e. Type of construction materials, architectural systems, and finishes.

f. Building expendability/changeability.

g. Physical security.

h. Barrier-free design.

i. Energy conservation (insulation, orientation).

j. Acoustical design.

k. Moisture vapor condensation design.

l. Composition of masses and spaces, architectural compatibility and architectural details to reflect the design theme and desired image, and the scale and nature of the activities involved.

m. Perception of the building details and volumes. (Specific provisions made, e.g., an identifiable sequence of viewing positions for experiencing the interior and exterior architectural design.)

n. Enhancement of materials and systems maintenance and operation.

o. Economy of building construction, operation, and maintenance: life-cycle cost effectiveness.

p. Coordination with Installation or Outside Agencies

r. Physical security support.

s. Occupational safety and health, as required.

t. Government furnished equipment.

u. Operations and maintenance support.

v. Government furnished and installed Communications Cables.

3.6.6.3.# Checklists

Fire Protection, Code Analysis and Handicapped Checklist shall be included in the Design Analysis. See Attachments A and B at the end of this Section.

3.6.6.4 Design Analysis Calculations

Calculations shall include the following:

a. Net room areas, occupant capacity and gross building areas. (Categorize areas and capacities under the titles of "Operational Space Requirements", "Administrative Space Requirements", "Storage Space Requirements", and "Support Space Requirements".)

b. K-values for each wall, window, door, or roof type studied or selected.

c. Acoustics.

d. Rainfall intensity relative to roof area and roof drain size and number calculations.

3.6.7 INTERIORS

3.6.7.1 Drawings

3.6.7.1.# Furniture Footprint

A furniture footprint indicating proposed furniture layout shall be incorporated into the drawings for coordination with building utilities and indicate spatial relationships. All furnishings including consoles are not considered part of the construction contract and shall be indicated as such on the drawings by the use of dashed lines.

3.6.7.2 Technical Specifications

Technical specifications shall be provided and coordinated with the drawings and design analysis. Specifications shall be edited to identify proposed product and installation requirements. Where materials or installation requirements are not covered in the provided specifications, information shall be prepared to cover these items.

3.6.7.3 Design Analysis/Narrative

The design analysis will contain an explanation of the desired image or visual appearance of the interior of the facility.

3.6.7.4 Building Related Exterior/Interior Design (SID)

3.6.7.4.# Definition

SID is the term referring to the building related exterior and interior

finishes. An SID shall involve the selection and sampling of all applied finishes necessary to complete the building's interior and exterior architectural features. Finishes include, but are not limited to, floor, wall and ceiling finishes; roofing; siding and trim; interior paints and finishes; wall covering; trim items; carpet; floor, wall and ceiling tiles; doors; plastic laminates for cabinet work, and signage. All of the SID components shall be included in the base bid.

3.6.7.4.# Interior and Exterior Materials, Finishes, Textures and Colors

Specific project and Army requirements for interior and exterior materials, finishes, textures and colors include:

General: Finishes, materials and colors chosen shall be in accordance with the RFP requirements and the Post/Base's Installation Design Guide. The design shall meet fire, health, safety, and accessibility codes and standards.

Exterior: The exterior portion of the materials and finishes design effort emphasizes the overall exterior appearance and the attention to details that produce a good architectural solution. The exterior solution shall satisfy the architectural and functional requirements of the design program.

Interior: The interior portion of the materials and finishes design ties the exterior of the facility to the habitable spaces. The material and finish selection shall be appropriate to the function of the space.

3.6.7.4.# Submittal Requirements for SID Notebooks (Color/Finish Sample Boards)

Furnish 4 sets of color/finish board(s) with attached samples of the proposed building-related finish materials mounted on 215 mm by 280 mm by 1.5 mm (8-1/2 inch by 11 inch by 1/16 inch) thick mat board in three-ring notebooks. Epoxy glue, hot-melt glue, or contact cement shall be used to attach samples; Scotch tape, double-backed tape, or rubber cement will not be acceptable. Heavy samples shall be mechanically fastened. Photographs or colored photocopies of SID materials are not acceptable.

The notebooks shall be labeled on the outside spine and front cover with the phase percentage, SID, project title and location, Contract number, date, and the Contractor's name and address.

3.6.7.4.# Sequence and Content of SID Submittal

The sequence and content of SID Submittals shall be as follows:

Title Page.

Table of Contents.

Narrative of Interior Design Objectives.

Exterior Elevation Drawing.

Exterior Building Material Legend.

Exterior Building Material Color Board.

Interior Color Placement Plan.

Interior Color Boards (according to color placement plan).

Each sample shall indicate color, texture, and finish; and, if patterned, shall be large enough to define full pattern. Samples shall be identified as to type of material, area of installation, manufacturer, and transmittal number under which certification of the material represented will be submitted in accordance with the requirements of Section 01330 CONSTRUCTION SUBMITTAL PROCEDURES.

Interior Signage Color Boards.

Interior Floor Plans.

Room Finish Schedules.

Signage Plans.

3.6.8 STRUCTURAL

3.6.8.1 Drawings

Drawings shall include roof framing plans, second floor framing plans (if applicable), floor slab plans, and 100 percentfoundation plans and details.

a. Roof framing plans shall show sufficient details to clearly indicate the type of framing system used, size and spacing of members and their elevations.

b. The location of all in-wall columns or pilasters shall be shown and all building structural members shall be at least outlined.

c. Foundation and slab plans shall show the size and location of all foundation elements, such as foundation walls, grade beams and footings. Elevations for footings shall be indicated on the plan. Plans for slabs-on-grade and exterior stoop slabs at building entrances shall show location and type of joints, slab thicknesses and reinforcing, elevation of slab surfaces, and any other design features, such as equipment bases, heavy Lab equipments, isolated foundations and the in-slab electrical raceway, which affect the slab design.

d. The sizes, locations and elevations of footings shall be shown.

e. Slab plans shall be coordinated with the Electrical sheets and shall indicate the locations of any in-slab electrical raceway trench ducts or similar items.

f. Concrete slab-on-grade thicknesses and sections shall be shown.

g. Proposed treatment of special foundations and other unique or complex features and details shall be shown on the drawings.

h. Provide Elevation views, sections, and details necessary to illustrate the design at a 50% level of completion.

i. Drawings shall include overall building plan dimensions, north arrows, and design notes.

3.6.8.2 Specifications

For the 50% design submittal the Contractor shall provide a listing by title and number of all Technical Specifications proposed for use in the final structural design.

3.6.8.3 Design Analysis

Design analysis shall follow the format described above in Paragraph "Design Analyses" and the specific content shall be essentially as outlined below.

3.6.8.3.# Design Criteria References

A list of design criteria references, such as Uniform Building Codes, ACI Standards, AISC Specifications, etc., which were used in the design of the project shall be included in the narrative.

3.6.8.3.# Design Loads and Conditions

A list of structural design loads and conditions shall be provided, including:

- Wind load parameters;
- Seismic design parameters;
- Roof live loads;
- Floor live loads, identifying each loading with usage and the room or space where used;
- Equipment loads, identifying each loading with usage and the room or space where used;
- Foundation design criteria, including the design depth for footings, allowable soil bearing pressure, equivalent fluid densities (or lateral earth pressure coefficients) for the design of earth retaining structures and building components, modules of subgrade reaction, and any other pertinent data derived from the recommendations of the Foundation Analysis, a copy of which shall be included as an Appendix to the design analysis.

3.6.8.3.# Structural Materials

A list of structural materials shall be provided, together with the stress grades and/or ASTM designations, as applicable, for structural steel, concrete, and reinforcing steel; the series for steel joists; and identification of the proposed use of each material in the structure.

3.6.8.3.# Availability of Precast Concrete Units

Where precast concrete units of particular cross section(s) and concrete strength are a part of the structural design, verification of their availability from precast producers in the project vicinity shall be documented. Acceptable documentation consists of letters from the producers or a written statement by the Contractor identifying the name and address of the precaster(s), description of units and concrete strength(s) available, date when availability was verified, and name of Contractor's staff member who obtained the verification.

3.6.8.3.# Description of the Structural System

A concise description of the proposed structural system for the building, together with the reasons for its selection, shall be provided. All principal elements of the structural system selected shall be described. Typically, these shall include:

- Roof systems, deck material, type and span direction of secondary roof framing members;
- Primary supporting members for the roof, whether steel frame, concrete frame, and/or concrete or masonry bearing walls;
- Masonry walls, type of material, and whether load bearing or non-load bearing, with location of load-bearing walls defined;
- The proposed system for resisting lateral forces (wind and earthquake) and transferring them to the ground, whether diaphragms, shear walls, braced or moment resisting frame, etc;
- Foundations, whether spread footings or continuous footings with concrete foundation walls;
- Concrete slab-on-grade floors, description of use and the location and types of crack control joints;
- The proposed treatment of any unusual structural loadings, features or unique solutions to structural problems;
- Measures taken to compensate for expansion/contraction and crack control in masonry walls;
- Identification of any major vibrating elements and measures taken to isolate them.
-Identification of any major equipment and measures taken to support them.

3.6.8.4 Design Analysis Calculations

The extent of the structural calculations shall be indicative of a design which has reached a 50% level of completion. Computations shall include snow, wind, dead and live loads. Computations shall show sizing and spacing of structural members for roof framing, sidewalls and foundation sizes.

3.6.9 MECHANICAL

Compliance with the Contract design requirements for the building mechanical systems will be reviewed at the submitted 50 percent drawings, design analysis, and specifications. Any conflicts in the design requirements or lack of thorough understanding of the nature and scope of work shall be identified and resolved prior to submittal of the 100 percent design. The Contractor must comply with Attachment C for mechanical room sizing.

3.6.9.1 Design Drawings

The 50 percent design drawings shall be fully coordinated with the design analysis. Sufficient plans, piping diagrams, sections, flow diagrams, details, schedules, and control diagrams/sequences shall be provided as necessary to define the required design intent. Floor plans shall use the architectural floor plans as a basis, with the building outline half-toned. Unless otherwise indicated, all floor plans shall be drawn at a minimum 1:100 scale and shall show room names and numbers. Sheet reference number sequencing shall be in accordance with the Fort Worth District CADD Standards Manual. Submittal drawings shall include, but not limited to, the following:

a. Mechanical Abbreviation, Legend, and General Notes Sheet

This sheet shall include all mechanical abbreviations and symbols that will be used on the drawings. Symbols shall be grouped into sections; as a minimum, provide sections for Plumbing and HVAC. Control drawing symbols shall be shown on separate drawing.

b. Exterior Packaged Air Cooled Chiller Piping Plan Sheet

Provide a sheet to show packaged air cooled chiller water piping exterior to the building.

c. Plumbing Drawings

The following plumbing drawings shall be provided:

Composite Plumbing Plan: For reference, composite plumbing plans shall be provided showing all plumbing systems for each level. Building outline and pertinent HVAC equipment shall be half-toned with plumbing system at standard lineweight. No construction notes shall be provided on the plans. A key plan and room schedule legend shall also be included on the composite plumbing plan sheets.

Plumbing Plans: Plumbing plans showing the design and tentative layout of the domestic hot and cold water distribution systems; make-up water piping; soil, waste and vent piping; and storm water drainage system shall be provided. Plans shall show all anticipated routing of piping systems from the connections within the structure to a point 2 meters outside the structure. The grade of all drain lines shall be calculated and invert elevations established. All plans shall show all plumbing fixtures. All electrical panels/equipment and pertinent HVAC equipment (chillers, expansion tanks, AHU's, pumps, etc.) shall be outlined in half-tone on the plumbing plans. Plans may be drawn at 1:100 scale as long as legibility is not compromised. Plumbing fixtures and drains shown on the drawings shall be designated by the same identification system used in the Technical Specification and Plumbing Fixture Schedule. Soil, waste, vent and storm drainage piping shall be shown on separate sheets from cold and hot water distribution piping and make up water piping as a minimum. A roof plan shall be provided to show roof drains and sanitary vent penetrations. Additional sheets shall be provided as need so legibility is not compromised.

Enlarged Mechanical Room Plumbing Plan: An enlarged mechanical/ room plumbing plan drawn at a minimum 1:50 scale shall be provided. Plan shall show layout of all plumbing equipment and piping within the rooms. In addition to all the plumbing systems required, the plan shall show half-toned outlines of all HVAC equipment located in the room, gas service, chilled water entrances, the fire protection entrance and risers, and the outline of any electrical panels or equipment located in the room.

Plumbing Detail and Schedule Sheet: The following details shall be provided: roof/overflow drains, gas fired water heater and hot water storage tank, and water service entrance. The provided plumbing fixture schedule and a contractor generated gas fired water heater schedule shall be provided.

d. Mechanical HVAC Drawings

Show on mechanical HVAC drawings, all items of mechanical equipment,

including chilled water equipment, air handling units, air distribution and exhaust systems, etc., to clearly illustrate all HVAC system designs, and to determine proper space allocation within the intent of the architectural layout requirements. Plans and sections shall be developed sufficiently to insure that major equipment items, piping, and ductwork cause no interference with structural members, electrical equipment, etc. The following HVAC drawings shall be provided:

Composite Mechanical HVAC Plan: For reference, composite mechanical HVAC plans shall be provided showing all associated mechanical systems for each level. For review purposes, all interior walls that extend from the floor to the roof structure shall be identified on the plans. Wall identifications shall be omitted from the 100 percent Corrected Design and Construction drawings. Building outline and electrical equipment shall be half-toned with mechanical systems at standard lineweight. No construction notes shall be provided on the composite mechanical HVAC plans. A key plan and room schedule legend shall also be included on the composite mechanical HVAC plan sheets.

Mechanical HVAC Plans: Mechanical HVAC plans showing the design and tentative layout of the hot water piping distribution system and equipment, chilled water piping distribution system and equipment, air supply and distribution systems, and ventilation and exhaust systems shall be provided. Air supply and distribution systems shall show all ductwork, including supply and return mains, branch ducts, terminal unit takeoffs, terminal units (ductwork to diffusers, all diffusers grilles and registers, and all fire and fire/smoke dampers. For the 50 percent submittal, all supply and return mains shall be shown as double-lined, while branch ducts, takeoffs, and ductwork to diffusers may be single-lined. The final design submittal shall show all ductwork as double-lined. All electrical panels/equipment and pertinent plumbing equipment shall be outlined in half-tone on the HVAC plans. Plans may be drawn at 1:100 scale as long as legibility is not compromised. Air supply and distribution systems and ventilation and exhaust systems shall be shown on separate sheets from HVAC piping systems as a minimum. Additional sheets shall be provided as needed so legibility is not compromised.

Enlarged Mechanical HVAC Plans: Enlarged mechanical room HVAC plans showing all mechanical systems drawn at a minimum 1:50 scale shall be provided. Plans shall show layout of all HVAC equipment, piping, and ducts located within the rooms. Equipment shall include (but not be limited to) air handling units with associated outside air, relief air, and supply/return air ducts, plenums and louvers; CW,and HW water pumps, exhaust/supply fans, gas service entrance, combustion air opening and ducts, unit heaters, chillers, expansion tanks, air separators, and DDC control panels. Plans shall show dedicated access space for items requiring maintenance. In addition to all the mechanical HVAC systems required, the plan shall show half-toned outlines of all major plumbing equipment, the water service entrance, fire protection entrance and riser, and any electrical equipment or panels located in the room.

Mechanical Room Sections: Preliminary mechanical room section shall be provided to ensure that major equipment items, piping and ductwork will fit as designed.

Chilled Water System Flow Diagram: Provide flow diagram showing chillers , the piping layout to the facility, and the facility piping

system including the pumps and connected CW equipment. Each pump and equipment item shall show associated GPM flowrate. All thermometers, pressure gauges, valves, and piping, shall be shown on the flow diagram.

Airflow Diagrams: Airflow diagrams shall be provided for each air handling system showing CFM quantities for outside air, return air, and supply air. Supply-air side of each diagram shall be broken down into zones, with each zone supply, return, and relief/exhaust CFM quantities identified.

Mechanical Detail Sheets: Installation details showing all specification requirements such as isolation and balancing valves, thermometers, pressure gauges, equipment pads, strainers, vents, hangers, vibration isolation, etc. shall be provided for each item of mechanical equipment. As a minimum, and as applicable, the following mechanical details shall be provided:

Chiller Piping Diagram
Unit Heater Piping Detail

Chemical Shot Feeder
Gas Service Entrance
Expansion Tank and Air Separator
Seismic Requirements for Floor-
Mounted and Suspended Equipment
Wall Propeller Supply/Exhaust Fan
In-line Supply/Exhaust Fan
Base Mounted End Suction Pump
In-line Pump
Air Handler Cooling Coil Piping Detail

Mechanical Equipment Schedule Sheets: Schedules shall be provided for each item of mechanical equipment. Furnished typical equipment schedules shall be used whenever possible and shall be revised and completed as necessary to suit the project requirements. In addition to the equipment schedules, damper and control valve schedules shall also be provided.

e. HVAC Control Drawings

One-line type control diagram showing all DDC interface points, a detailed sequence of operation, and a DDC control points list shall be provided for all mechanical equipment and systems. Sequence of operation for each item of equipment and system shall be sub-sectioned into paragraphs describing discreet operational requirements.

HVAC Control Diagrams: A Control Diagrams shall be provided for each system or item of equipment. Systems diagrams shall include every major component installed in or connected to the system, and only one system shall be shown on each diagram. Control Diagrams shall schematically show all sensors, controllers, actuators, indicators, and operator interface devices that are required for the complete automatic control and monitoring of the system. All sensing, controlling, activating, indicating and interfacing devices shall be shown with all functional interconnections to inputs and outputs. All associated

thermometers and pressure gauges, located in their correct mechanical locations, shall also be shown on the diagrams.

Sequence of Operations: Sequence of Operations shall be provided for each item of equipment or system and shall fully describe the intended operation of the equipment or system in all different operating modes. Sequences shall include a description of all indication instrumentation, alarm conditions, and automatic actions to be taken upon occurrence of alarm conditions. Design setpoints shall be specified and indicated as being adjustable.

Control Points Lists: Provide DDC control points lists for all items of equipment and systems.

The following drawings shall be provided:

HVAC Control Plan: This sheet shall show location of all thermostats and equipment controlled, variable frequency drives and equipment controlled, and DDC panel locations.

HVAC Controls Legend: This sheet shall include all control abbreviations and symbols that will be used on the drawings. Furnished Controls Legend sheet shall be used as a basis for all abbreviations and symbols used on the Final Control Drawings.

Misc Systems: These sheets shall include all miscellaneous equipment items such as supply/exhaust fans, unit heaters, controls air compressor, etc. that are not interlocked to the main heating, CW, or air handling unit systems. Provide one-line control diagram, sequence of operation, and DDC control points list for each item of equipment on the same sheet.

Chilled Water System: Provide a chilled water system control diagram, sequence of operation, and DDC control points list.

Air Handling Systems: For each air handling system, provide an air handling system control diagram, sequence of operation, and DDC control points list.

3.6.9.2 Technical Specifications

Submit specification sections to specify the quality, characteristics, installation procedures, commissioning and testing requirements of all items of the proposed mechanical design.

3.6.9.3 Design Analysis Narrative

The narrative portion of the design analysis shall contain a narrative description and analysis for each of the mechanical portions of the design. The basis and reasons for specific engineering decisions, special features, unusual requirements, etc., shall be explained or summarized as applicable. If it is necessary to deviate from criteria or standard practice, reasons shall also be included. Design statements shall be provided in sufficient detail to enable the reviewer to get a clear picture and understanding of all included work so that acceptance will be granted. Narrative shall be complete relative to scope and intended design approaches. The total scope projected to final design shall be outlined in

a form that will be conveniently adapted, expanded, and detailed at the final design stage. If alternatives are to be evaluated and selected by the designer, findings (pros and cons) and conclusions shall be included. The design analysis shall carry a complete narrative for every item and system covered in the design, and shall include, but not be limited to, the following:

a. Index

Provide a design analysis index identifying all main and sub-paragraph headings.

b. Project Summary

Provide a brief description of the mechanical design objectives.

c. Applicable Criteria

A list of all applicable criteria used for basis of design.

d. Technical Specifications

A list of Technical Guide Specifications that will be used for the project.

e. Design Conditions

A list of Mechanical HVAC design conditions including elevation, latitude, heating/cooling degree days, winter and summer outside design temperatures, inside design temperatures for all spaces, ventilation rates, etc. shall be provided.

f. System Descriptions

Provide a complete description of all building systems; include the designer's reasons for selecting specific materials, systems, etc. in which the reason for selection is not obvious. System descriptions for proposed mechanical systems shall be include, but not limited to, the following:

Plumbing System

Roof Drainage System

Interior Gas Piping System

Hot Water Heating System

Chilled Water System

Air Supply and Distribution Systems

Ventilation and Exhaust Systems

Direct Digital Control System (DDC)

Seismic Protection

Power Outage Start-Up Sequence

g. HVAC Zone Descriptions

A tabulated summary of the heating and cooling load shall be provided. The data shall be broken down by air handling systems, zones, and rooms shall include, the heating and cooling load; the supply, return and ventilation CFM; and heating water GPM for each zone.

3.6.9.4 Design Analysis Calculations

The Design Analysis calculations shall provide an estimate of the heating, cooling, and ventilation loads to determine a preliminary selection of the type and size of mechanical equipment to be used. Design calculations shall be provided in sufficient detail to enable the reviewer to get a clear understanding of all work to allow acceptance. Backup data shall be furnished to support basic design decisions related to sizing of major equipment and materials, and performance of specific systems or equipment. Manufacturer's catalog data sheets shall be provided for each item of equipment selected. Heating and cooling load calculations shall be performed by computerized procedures. Charts, curves, tables, and graphs used in support of calculations shall be provided. Such data must be from a recognized source. Design calculations and computations shall be provided for all systems and shall include, but not be limited to, the following:

a. Index

Provide a design analysis index identifying all calculation items.

b. Design Conditions

A list of Mechanical HVAC design conditions including elevation, latitude, heating/cooling degree days, winter and summer outside design temperatures, inside design temperatures for all spaces, ventilation rates, etc. shall be provided.

c. Zone Air-Conditioning Loads

Preliminary heating and cooling calculations shall be prepared using computer software based on the transfer function method (TETD/TA) as described in the ASHRAE Handbook Fundamentals. As a minimum, separate cooling calculations shall be provided for each temperature control zone.

d. Psychometric Charts

A psychometric chart, corrected for site elevation, shall be plotted for each air handling system. All points in the conditioning process (e.g., space condition, return air, outside air, mixed air, fan temperature rise, coil leaving condition) shall be clearly identified on the psychometric chart and verification of both sensible, latent, and total capacity shall be shown using the appropriate data from the chart.

e. Equipment Selection Data

Provide computerized selection data where manufacturer's selection software is available. Provide catalog selection data if manufacturers selection software is not available.

f. Altitude Derating

All equipment sizing and selection shall include deration for site altitude.

g. Catalog Cut Sheets

Catalog cut sheets for each equipment item shall include where relevant, but shall not be limited to, all relevant curves and graphs, input and output capacities, component description and configuration, electrical requirements, accessories, dimensional and weight data, sequence of operation, and manufacturers specifications.

h. Combustion-Air Requirements

Include combustion air CFM quantity and free area calculations, combustion air heating requirements, and selection of combustion air heating equipment.

i. Mechanical Ventilation

CFM calculations for each area requiring mechanical ventilation for cooling.

j. Ventilation

Ventilation CFM calculations and criteria for provide all areas, toilets, restrooms, kitchen, severy, dining area,and janitors closets,ect.

k. Domestic Water Demand

Calculations for determining the size of the domestic cold water supply line to the building shall be provided.

l. Domestic Hot Water Demand

Calculations for domestic hot water demand.

m. Gas Piping System

Calculations for pipe sizes based on equipment input. Equipment input shall be based on volume of gas required to satisfy equipment output at altitude. Provide gas flow diagram showing all equipment, equipment heating and gas volume input, and pipe sizes.

n. Roof Drainage System

Roof areas and calculations used in determining storm drainage pipe sizes and sizing of pipes shall be provided.

o. Electrical Load Summary

A summary of all mechanical equipment and the associated electrical load requirements shall be provided.

3.6.10 ELECTRICAL

Determine compliance with the design requirements for the building electrical systems by a review of the Contract requirements, design analysis, and specifications. Conflicts in the design requirements or lack of thorough understanding of the nature and scope of work shall be identified and resolved before submittal of the 50 percent design.

3.6.10.1 Design Drawings

Fully coordinate the 50 percent design drawings with the design analysis. Provide sufficient plans, single-line diagrams, riser diagrams, details, and schedules as necessary to define the required design intent. Floor plans shall use the architectural floor plans as a basis with the building outline half-toned. Unless otherwise indicated, all floor plans shall be drawn at a minimum 1:50 scale and shall show room names and numbers. Sheet reference number sequencing shall be in accordance with the Ft. Worth District CADD Standards Manual. Submittal drawings shall include, but not be limited to the following:

a. Electrical Legend

Describe and define the electrical and communications symbols used on the plans.

b. Electrical Abbreviations

Define abbreviations used on electrical plans. This information may be included on the electrical legend.

c. Drawing Notes

Identify drawing notes by a numerical label to further clarify or describe the design engineer's intent.

d. One-Line Diagram

Detail the complete electrical system with a simplified one-line diagram. Use standard symbols for electrical equipment including, but not limited to switchgear, sectionalizing cabinets, transformers, generators, uniterruptible power systems (UPS), switchboards, panel boards, power distribution units (PDUs), motor control centers (MCCs), motor starters. Include switchgear fuses or circuit breaker ratings; transformer ratings (including K-ratings) and connection configuration; switchboard ratings (including metering); panelboard current and ampere interrupting current (AIC) ratings; PDU ratings (including isolation transformers and K-ratings), raceway and conduit sizes and material type; MCC ratings; motor starter ratings; and conductor and ground type, size, and insulation ratings.

e. Riser Diagram

Illustrate the electrical equipment locations.

f. Power Plan

Detail the electrical wiring and non-lighting wall and raised floor receptacles.

g. Power Cable Tray Plan

Detail the underfloor power cable tray components, outlets, and routing.

h. Communications Cable Tray Plan

Detail the underfloor communications cable tray components, outlets, and routing.

i. Lighting Plan

Detail the electrical wiring and switching for lighting.

j. Lighting Fixture Schedule

Detail the lighting fixture types to be provided.

k. Panelboard and PDU Schedules

Detail the circuits and circuit breakers or fuse locations in all panelboard and PDUs known at this design level.

l. Emergency Systems

Detail the electrical requirements for emergency systems such as emergency generator, UPS, emergency lighting and fire alarm system (coordinate with fire protection plans).

m. Site Plan

Detail the connection of pad-mounted switchgear, pad-mounted sectionalizing cabinets and detail underground electrical and communications ducts.

n. Communications System

Detail the conduit and raceways required to support communications systems, including, but not limited to intercoms, security, cable television, data transmission (local area network), and telephone.

o. Security System

Detail the security camera, alarm requirements and riser diagram.

p. Lightning Protection System

Detail the lightning protection system including air terminal types and locations; cross and down conductor material, sizes and connections; ground rod material, sizes, and locations; ground counterpoise materials, sizes, and routing, and test well construction and locations.

q. Grounding System

Detail grounding electrode; conductor materials, sizes, and locations; and isolation grounds.

r. Cathodic Protection System

Detail test point construction and locations, sacrificial anode systems, impressed current systems, etc.

s. Miscellaneous Details

Provide communications manhole details, electric vault details, special light fixture details, etc.

t. Service Modules

A design "go-by" drawing for locations of raised access floor service

modules will be provided to the Contractor at the pre-design conference. Conformance to the design "go-by" drawing will be required for issuance of design conformance acceptance by the Government.

3.6.10.2 Technical Specifications

Submit specification sections to specify the quality, characteristics, installation procedures and testing requirements for all items of the proposed electrical design.

3.6.10.3 Design Analysis Narrative

The narrative portion of the design analysis shall contain a narrative description and analysis for the following portions of the electrical design: overhead and underground exterior electrical distribution, exterior communications distribution, interior electrical distribution, interior communications distribution, interior and exterior lighting, lightning protection, grounding, emergency power, and cathodic protection. The basis and reasons for specific engineering decisions, special features, unusual requirements, etc., shall be explained or summarized as applicable. Reasons shall be provide if it is necessary to deviate from criteria or standard practice. Design statements shall be provided in sufficient detail to enable the reviewer to get a clear understanding of all included work so that acceptance will be granted. Narrative shall be completed relative to scope and intended design approaches. The total scope projected to final design shall be outlined in a form that will be conveniently adapted, explained, and detailed at the final design stage. If alternatives were to be evaluated and selected, pro and con findings and conclusions shall include, but not be limited to the following:

a. Index

Provide a design analysis index identifying all main and sub-paragraph headings.

b. Project Summary

Provide a brief description of the electrical design objectives.

c. Applicable Criteria

A list of all applicable criteria used for the basis of design.

d. Technical Specifications

A list of Technical Guide Specifications that will be used for the project.

e. Design Conditions

A list of electrical design conditions.

f. System Descriptions

Provide a complete description of all building electrical and communication systems. Include the designer=s reasoning for selecting specific materials and systems for which the reason is not obvious. System descriptions shall include, but not be limited to the following:

Overhead and Underground Exterior Electrical Distribution
Exterior Communications Distribution
Interior Electrical Distribution
Interior Communications Distribution
Interior and Exterior Lighting,
Lightning Protection
Grounding
Emergency Power
Cathodic Protection

g. Design Analysis Calculations

The design analysis calculations shall provide an estimate of electrical loads to determine a preliminary selection of the type and size of electrical equipment to be utilized. Design calculations shall be provided in sufficient detail to enable the reviewer to get a clear understanding of all work to allow acceptance. Backup data shall be furnished to support basic design decisions related to sizing of major equipment, material selection, and performance of specific systems or equipment. Manufacturer=s catalog data sheets shall be provided for each item of equipment selected. Calculations may be performed by manual or computerized procedures. Use of standardized charts, curve, tables, and graphs will generally be acceptable for portions of required calculations in lieu of specific calculation procedures. Such data must be from a recognized source that is identified in the design analysis and shall be included with the calculations. Design Calculations and computations shall be provided for all systems and shall include, but not be limited to the following:

(1) Service

Sizing of building electrical services based on estimated maximum demand for both the technical and non-technical loads.

(2) Transformers

Sizing of exterior oil-filled and interior dry type transformers.

(3) Electrical Cable Trays and Conduit

Sizing of cable trays and conduit for the interior electrical distribution system.

(4) Communications Cable Trays

Sizing of communications cable trays for the interior communications distribution system.

(5) Feeders

Sizing of main feeders, including motor circuits. Calculate voltage drops.

(6) Branch Circuits

Sizing of branch circuits, including motor circuits. Calculate voltage drops.

(7) Panelboards and PDUs

Sizing of panelboards and PDUs, including circuit protection. Calculate K-rating for transformers in PDUs.

(8) Illumination Calculations

Calculations for interior and exterior lighting. Calculations shall be adjusted to compensate for special applications: irregularly shaped rooms, open sides, ceiling obstructions, corridors, etc.

(9) Short Circuit Evaluation

The maximum possible fault current at the building service shall be calculated for both the technical and utility power.

(10) Lightning Protection Calculations

Size the aerial terminals and cross and down conductors.

(11) Cathodic Protection

Size the cathodic protection system components.

3.6.11 FIRE PROTECTION

Compliance with the Contract design requirements for the building fire protection systems will be reviewed at the submitted 50 percent drawings, design analysis, and specifications. Any conflicts in the design requirements or lack of thorough understanding of the nature and scope of work shall be identified and resolved prior to submittal of the 100 percent design.

3.6.11.1 Design Drawings

The 50 percent design drawings shall be fully coordinated with the design analysis. Sufficient plans, diagrams, sections, and details shall be provided as necessary to define the required design intent. Floor plans shall use the architectural floor plans as a basis, with the building outline half-toned. Unless otherwise indicated, all floor plans shall be drawn at a minimum 1:100 scale and shall show room names and numbers. Sheet reference number sequencing shall be in accordance with the Fort Worth District CADD Standards Manual. Submittal drawings shall include, but not limited to, the following:

3.6.11.2 Fire Protection Plans

Show on fire protection plan drawings:

- fire service entry and size to a point 1525 mm (5 feet) outside of building;
- back flow preventer and size;
- system riser and size;
- zone risers, fire department connection, alarm bell, detectors, zones, room by room occupancy hazards and ceiling types per zone in

tabular format, general description of system, applicable NFPA codes listing, sprinkler type per ceiling and application;
- water demand data, including design density, hose allowance, and design area for each applicable occupancy hazard; and
- a note stating that system shall be hydraulically designed.

Plans shall not show sprinkler piping or heads, unless it is necessary for coordination or system definition in special applications.

3.6.11.3 Fire Protection Detail Drawings

Show on fire protection detail drawings:

- mechanical riser diagram, including all pipe sizes;
- electrical riser diagram;
- any necessary sections to show routing of piping or sprinkler head locations, fire service entrance detail, exterior wall and slab penetration details, hydraulic design data from flow test provided by Government, hydrant designations from flow test, and fire protection symbols list.

3.6.11.4 Site Plan

Site plan shall include:

- underground fire service main routing and size, from point of connection at existing water main, to building entry point;
- and fire hydrant locations used in flow test.

Fire hydrants shall be labeled to match flow test designations shown on drawings and described in design analysis.

3.6.11.5 Life Safety Plan

Show on Life Safety Drawing:

- location of fire separation walls, column, floor and roof protection,
- path of travel for emergency egress and panic exits,
- access to building for fire fighting,
- rated doors and windows,
- requirement for mechanical and electrical penetrations through fire separation walls and floors,
- placement of fire extinguishers, and
- occupancy types.

3.6.11.6 Technical Specifications

Submit specification sections to specify the quality, characteristics, installation procedures, commissioning and testing requirements of all items of the proposed fire protection design.

3.6.11.7 Design Analysis Narrative

The narrative portion of the design analysis shall contain a narrative description and analysis for each of the fire protection portions of the design. The basis and reasons for specific engineering decisions, special features, unusual requirements, etc., shall be explained or summarized as applicable. If it is necessary to deviate from criteria or standard

practice, reasons shall also be included. Design statements shall be provided in sufficient detail to enable the reviewer to get a clear picture and understanding of all included work so that acceptance will be granted. Narrative shall be complete relative to scope and intended design approaches. The total scope projected to final design shall be outlined in a form that will be conveniently adapted, expanded, and detailed at the final design stage. The design analysis shall carry a complete narrative for every item and system covered in the design, and shall include, but not be limited to, the following:

a. Index

Provide a design analysis index identifying all main and sub-paragraph headings.

b. Project Summary

Provide a brief description of the fire protection design objectives.

c. Applicable Criteria

A list of all applicable criteria used for basis of design.

3.6.11.8 Technical Specifications

A list of Technical Guide Specifications that will be used for the project.

3.6.11.9 System Descriptions

Provide a complete description of all fire protection systems; include the designer's reasons for selecting specific materials, systems, etc. in which the reason for selection is not obvious. System descriptions for proposed fire protection systems shall include, but not limited to, the following:

Wet Pipe Sprinkler System

Fire Alarm and Detection System

Life Safety Systems and Configurations

3.6.11.10 Fire Protection Zone Descriptions

A description of zones served by each zone riser. A description of fire alarm system zones.

3.6.11.11 Design Analysis Calculations

The Design analysis calculations shall provide an estimate of hydraulic feasibility based on, water flow demand criteria shown on drawings and in design analysis, system configuration, and hydraulic data from flow test provided by Government. Hydraulic calculation must be based on sound engineering judgement and shall indicate conclusive proof that the sprinkler system can be constructed and hydraulically designed to perform in accordance with NFPA 13, using reasonable sprinkler pipe sizes. Although design drawings shall be performance based, underground fire service and system riser sizes shall be shown on drawings, therefore, must be incorporated into calculations. Calculations, shall include, but shall

not be limited to; pressure required at most remote sprinkler head; pressure drop in equivalent length of sprinkler piping from system riser to most hydraulically remote location; pressure drop through preaction deluge, check and isolation valve; pressure drop from friction and dynamic losses in system riser and underground fire service to point of connection to water main, and pressure drop through reduced pressure principal backflow preventer. Pressure loss in meters per 100 meters of equivalent length of sprinkler piping allowed shall be provided as a part of calculations to determine if sprinkler pipe sizes required for system to hydraulically perform are within reason. Provide a hydraulic graph showing curve generated from flow test data and system demand curve. System demand curve shall show demand required for sprinkler system, and shall show hose allowance for occupancy hazard of hydraulically most remote area used for hydraulic calculation estimate. Provide appropriate safety factor multiplier for estimated demand in most hydraulically remote area. Safety factor multiplier shall take into account excess sprinkler heads due to room configurations, and increased flow from upstream sprinkler heads. System riser, reduced pressure principal backflow preventer, and underground fire service will be sized, based upon this estimated demand.

3.6.11.11.# Hydraulic Calculations

If hydraulic calculation, based on estimated demand and equivalent length of sprinkler piping to hydraulically most remote area, is borderline; and therefore inconclusive, a detailed hydraulic calculation and analysis, including sprinkler piping and head layout, must be provided.

3.6.12 ENVIRONMENTAL

The following items shall be developed and provided by the Contractor for the 50% submittal:

Environmental Survey Sampling Plan

A limited environmental survey of Building 2789 has been completed by Fort Sam Houston personnel. Floor tile and mastic were sampled for asbestos in areas of the building and were found to be positive via laboratory analysis. Based on historical data, all painted surfaces in Building 2789 contain lead-based paint. The specific results of the existing environmental survey are included in this RFP as an attachment for the Contractor's review. The Contractor shall complete all additional sampling and testing necessary to prepare plans and specifications and develop strategies for removing all hazardous material from Building 2789 before it is demolished. Prior to this sampling and testing, the Contractor shall be required to prepare an environmental survey sampling plan for Government review and approval. As a minimum, the sampling plan shall contain the following:

The Environmental survey sampling plan shall adequately describe the survey tasks required of the sampling team. Prior to developing the Environmental survey, the Contractor shall review the existing environmental survey provided in this RFP and obtain from the installation and review all as-built floor plans, shop drawings, remodeling records, etc. that describes Building 2789.

Contractor shall develop single line CADD drawings consisting of floor plans of Building 2789 to show areas surveyed and sampling locations. A north arrow indicator shall be provided on the drawing. These drawings shall be used to record field data during the sampling event.

The sampling plan shall denote what items are to be surveyed and quantified, number of tests required, and sampling locations. The sampling plan shall describe inspection and sampling procedures required, guidance for LBP survey, fluorescent lighting fixtures and ballasts survey, transformers, ozone depleting compounds (ODC) Containing Equipment survey, Thermostats survey, and asbestos containing building material survey. The sampling plan shall also reflect field data recordation and photography required, sampling, packaging, and handling of samples to be shipped for testing. The Contractor shall also determine level of safety protection for the survey technicians. An example of a government approved environmental survey sampling plan is included in this RFP for the Contractor's review.

Basic Stormwater Pollution Prevention Plan

If required, the Contractor shall submit for Government review and approval a basic stormwater pollution prevention plan developed in accordance with Section: 01420 - STORMWATER NPDES PERMIT REQUIREMENTS, and Section: 01421 - OUTLINE OF A BASIC STORM WATER POLLUTION PREVENTION PLAN.

Plans for Storm Water Controls and Implementation of PPP

The Contractor shall also provide drawings that describe stormwater control details to be used and denote where these stormwater controls will be implemented during the various phases of construction of the new dining facility and demolition of the old facility. Drawings shall meet the format requirements described earlier in this section and be 100 percent complete.

Design Analysis

The Contractor shall prepare a Chapter in the Design Analysis entitled: "Environmental Protection Compliance". This Chapter shall summarize how the project complies with all environmental laws and regulations. As a minimum, the Chapter shall include the following:

a. The Permitting and/or Approving Authority(ies).

b. Construction/Operating Permits, Notices, Reviews and/or Approvals required. If, when checking with the agencies, a permit, notice or approval is not required, include a copy of the telephone conversation memorandum or letter from the agency.

c. Time required by the permitting agency(ides) to process the application(s) and issue the permits.

d. Fee schedule including filing/application fees, review fees, emissions fees, certification testing, etc.

e. Monitoring and/or compliance testing requirements.

f. Actual Environmental regulations governing the applications, exemptions, variances, etc. or at a minimum a brief summary of the regulation and title.

3.6.13 KITCHEN EQUIPMENT

3.6.13.1 Drawings

50 percent Kitchen Equipment drawings submittal shall be a complete set of drawings. Refer to RFP Attachments for information and format.

3.6.13.1.# Kitchen Equipment Plan

Provide a double line Composite Floor Plan of the entire building, drawn the largest scale practicable to include the entire building on a single sheet. All Equipment shall be graphically shown, key-noted, and coordinated with the Architectural Floor Plan, Kitchen Equipment Schedules and Kitchen Equipment Detail Sheets.

3.6.13.1.# Kitchen Equipment Schedules

Provide description, quantities, class, size, electrical information, plumbing information, comments, and comments key list of each kitchen equipment as shown in Kitchen Equipment Plan

3.6.13.1.# Kitchen Equipment Details

Provide enlarged plans, elevations, and details of custom fabricated units of Kitchen Equipment as noted in Comments of Kitchen Equipment Schedules. Provide dimensions, notes, and section cuts for these details.

3.6.13.2 Specifications

Provide and coordinate the SECTION 11400 - FOOD SERVICE (Kitchen) EQUIPMENT with the drawings and schedules.

3.6.13.3 Manufacturer Catalog Cut Sheets

Provide manufacturer catalog cut sheets on each item of food service equipment and tag on each sheet the equipment item number that coordinates with the plans, schedules, and specifications.

3.7 100 PERCENT DESIGN REQUIREMENTS

3.7.1 Submittal Register

Prepare a complete a Submittal Register using ENG Form 4288 "Submittal Register" as specified in Section 01330 CONSTRUCTION SUBMITTAL PROCEDURES, listing submittals for all specification sections that require submittals.

Fill in columns "c" through "o" and submit with the 100 percent design submittal. In columns (p) and (q), insert "GA" for Government approved items and "FIO" for Information Only (Contractor Approved) items.

3.7.2 CIVIL

3.7.2.1 Civil Drawings

The drawings shall be complete, include all necessary and required details, thoroughly checked, and fully coordinated with the technical Specifications and all other Construction Documents. Previous comments and applicable criteria changes shall have been incorporated into the design.

3.7.2.2 Technical Specifications

The technical specifications shall be complete, fully coordinated with the drawings, and include all civil work.

3.7.3 LANDSCAPING

3.7.3.1 Drawings

a. Landscape Plan

A Landscape Plan showing trees, shrubs, ground covers, seeded and sodded areas, shall be prepared. The Landscape Plan shall be prepared by a licensed Landscape Architect. The A/E shall provide a landscape plan that is in accordance with the Installation Design Guide and the Historic Landscape Management Plan for Fort Sam Houston. The project site is within the Area of Potential Effect and requires a continuous, vegetative screen along the project limits to serve as a visual buffer between the project site and the adjacent historic districts. The Contractor shall specify types of plant materials selected from Recommended Plant List (Attachment G) that are locally grown, commercially available and acclimated to the project environment. The Landscape Plan shall include a plant materials schedule or listing. This schedule shall include botanical names, common names, key, size and the method of transplanting. The Landscape Plan shall also show all unsurfaced ground areas disturbed by construction within the project limits with these areas shown to be seeded, sodded, or mulched as required.

b. Landscape Details

The Contractor shall provide designs and details as necessary for required site furnishings and accessories.

c. Sprinkler Irrigation Systems

Sprinkler irrigation plan shall designate the trees, shrubs, bushes, ground cover, and lawn area to be irrigated. Provide flow and pressure requirements. Also include appropriate details.

3.7.3.2 Specifications

Specifications shall be coordinated with the drawings and include all landscape items (such as seeding, sodding, and trees and shrubs) including landscape furniture, lighting and other specialty items which may be included. Special sections shall be prepared to cover those subjects for which no pattern guide specifications are available. These specifications shall be in final form for construction and include all changes requested during the 50 percent review stage.

3.7.4 ARCHITECTURAL

3.7.4.1 Drawings

The drawings shall be complete, include all necessary and required details, thoroughly checked, and fully coordinated with the technical Specifications and all other Construction Documents. Previous comments and applicable criteria changes shall have been incorporated into the design. Removal work and details should be shown on separate drawings. The contract drawings shall fully describe the type and the scope of work required. The layout of individual sheets and the organization of the assembled set shall follow and communicate a logical sequence. General information shall be presented first, progressing to more detailed information. When assembling details, begin in the upper left-hand corner of the sheet with

letters progressing to the right and down. When dimensioning, use arrowheads, not dots or slashes. Where major structural elements are included as parts of architectural detailing, do not indicate sizes. These elements must be fully defined in the structural design documents. See 50% Architectural drawing submittal requirements for drawing scales of remaining drawings to be submitted. Include all drawings from the 50% submittal plus any additional detail drawings required for complete 100% design. These include but not be limited to the following:

Interior Elevations and Details
Door Details
Window Details
Louver Details
Roof Details
Stair Details
Casework Plans, Elevations, and Details
Wall Plan Details and Plan Details
Fire Wall Details and Penetration Conditions
Sound Wall Details and Penetration Conditions
Sealant Details
Ceramic Tile Details
Ceiling Details
Control/Expansion Joint Details
All Miscellaneous Details

3.7.4.2 Technical Specifications

The technical specifications shall be complete and fully coordinated with the drawings. Special sections shall be prepared to cover those subjects for which no pattern guide specification is available. Notes to the Designer that accompany specifications shall be used in editing technical guide specifications. All specification indexes shall be completely edited to reflect the paragraphs retained in the body of the specification. All references that have not been used in the body of the specification shall be edited from the guide.

3.7.4.3 Design Analysis Narrative

The Design Analysis shall include the basic information presented in the previous submittal, corrected to reflect changes in content made in response to review comments. Outline specifications shall be omitted from the Final Design Analysis as the information is included on the final drawings and project specifications. The design analysis shall be written in the present tense.

3.7.4.4 Design Analysis Calculations

The Design Analysis calculations shall include the basic information presented in the previous submittal, corrected to reflect changes in content made in response to review comments.

3.7.5 INTERIORS

3.7.5.1 Drawings

Updates required as a result of the 50 percent review indicating proposed furniture layout shall be incorporated into the drawings by the use of dashed lines.

3.7.5.2 Technical Specifications

Technical specifications shall be in final form for construction and shall include all changes requested during the 50 percent review stage. All specifications shall be completely edited and fully coordinated with the drawings to accurately and clearly identify the product, installation requirements, and testing methods of this facility.

3.7.5.3 Design Analysis

Updates as a result of the 50% review conference shall be made to the design analysis.

3.7.5.4 Building Related Interior Design (SID)

Updates as a result of the 50% review conference shall be made to the SID Notebooks.

3.7.6 STRUCTURAL

3.7.6.1 Drawings

Final drawings shall be complete, thoroughly checked, and fully coordinated with the other disciplines, specifications and all other construction documents. Previous comments and applicable criteria changes shall have been incorporated into the design. The drawings shall be complete with all plan views, sections, details, schedules, diagrams, and notes necessary for the construction of the project. For structural steel framing, the drawings shall meet the requirements for design drawings set forth in the AISC Specification for the Design, Fabrication, and Erection of Structural Steel for Buildings. All structural steel members and connections shall be fully detailed. For structural concrete, the drawings shall conform to the standards for engineering (design) drawings set forth in the ACI SP-66, ACI Detailing Manual. For precast concrete, the drawings shall comply with the requirements set forth in the PCI Mnl-120, PCI Design Handbook. Additionally, those items described below which are applicable to the design shall be incorporated into the drawings.

3.7.6.1.# Grid Systems, Dimensions, and Floor Elevations

Each foundation and slab plan and roof framing plan shall have an alpha-numeric grid system aligned with any in-wall columns or pilasters, or with load bearing and non-load bearing walls, as applicable. The same grid system shall be used for all plan views. Each plan view shown shall have all necessary dimensions. On plan views, the dimensions shall define the location of grid lines, offsets, and all structural elements, as well as the overall sizes of the structure. The finish elevation of the floor slab shall be indicated as 100 000 mm, and elevations for foundations, walls and roof members shall be referenced to this basic elevation.

3.7.6.1.# Plan Sheets

3.7.6.1.# Foundation and Slab Plans

Foundation and slab plans shall show the size and location of all foundation elements, such as foundation walls, grade beams and footings. Elevations for footings shall be indicated on the plan. Plans for slabs-on-grade and exterior stoop slabs at building entrances shall show location and type of joints, slab thicknesses and reinforcing, elevation of

slab surfaces, and any other design features, such as equipment bases, heavy Lab equipments, isolated foundations and the in-slab electrical raceway, which affect the slab design.

3.7.6.1.# Roof Framing Plans

Roof framing plans shall be provided for all parts of the structure. Plans shall show the size, spacing, and location of all roof framing members, their supporting in-wall columns, pilasters or walls, all auxiliary members such as bracing and bridging, and the size and location of all major openings through the roof. Plans shall show support system for satellite dishes.

3.7.6.1.# Elevation Views, Sections and Details Sheets

Elevation views, sections and details necessary to illustrate fully the design shall be provided. Some requirements peculiar to the various structural materials are described below.

3.7.6.1.# Concrete

Include elevation views as necessary, plus sections and details to show the outlines of concrete cross-sections, reinforcing bar arrangements, concrete cover for rebar, installation of embedded items, and joint construction. All lap splice and embedment lengths for reinforcing bars shall be clearly indicated on the drawings. A sill detail for each foundation condition at exterior and interior doors shall be provided.

3.7.6.1.# Masonry

Wall reinforcing shall be located and identified on plans, in section cuts, elevation views or in schedules. Structural elevations when needed shall be included to clarify the construction requirements for masonry reinforcement, especially the reinforcement around wall openings. Details applicable to the project shall be shown on the structural drawings. Listed below are some frequently required masonry details, most of which are shown in ICBO-01, Uniform Building Code, and on the Typical Masonry Sheets. The Typical Masonry Sheets will be provided to the successful offeror upon request and may be edited and incorporated into the final drawings as needed. Additional details as required shall be extracted from other sources and incorporated into the final drawings. All details shall be fully edited to reflect the specific requirements of this project. Supplemental details shall be added as necessary to complete the design.

Masonry Details Frequently Used

- Masonry Control Joint (MCJ).
- Control Joint at Bond Beam.
- Bond Beam Corner Reinforcement.
- Seismic Reinforcement Around Wall Openings.
- Wall Reinforcement Details for l and/or 2 bar-per-cell stiffeners.
- Doweled or Other Connection of Masonry to Foundation, Floor, Roof or Bond Beam.
- Bond Beam (or Steel) Lintels and Bearing Details
- Lateral Support Detail for Top of Masonry Partition Walls. (lateral support locations must be shown on framing plan sheets.)
- Steel Joist Bearing

3.7.6.1.# Structural Steel, Steel Joists, and Steel Decking

Structural steel connections shall be fully detailed and shown on the drawings. The anchorage of beams, trusses, joists, and steel deck to walls or other bearings, and the extra framing or reinforcement required at deck openings shall also be detailed. Notes, details, or schedules on the drawings shall indicate the steel deck attachment method to be used, and shall give the size and spacing for perimeter, side lap, intermediate supports and end lap attachments. Welded connections shall be detailed using standard weld symbols illustrated in AWS D1.1. All applicable weld sizes, spacing, types, contours and finishes shall be shown.

3.7.6.1.# Cold-Formed Steel Studs

Cold-formed steel connections shall be fully detailed and shown on the drawings. The anchorage of studs to top and bottom runners, of top and bottom runners to supporting members, and the extra framing at openings shall also be detailed. Notes, details, or schedules on the drawings shall indicate the steel stud and runner dimensions, spacing, and attachments.

3.7.6.1.# Schedules

3.7.6.1.# Foundation Schedules

Foundation schedules for footings or grade beams shall be included, as applicable. The schedule shall include all pertinent information required for the foundation system being used.

3.7.6.1.# Framing Schedules

For concrete framing, beam and column schedules shall conform to the requirements of the ACI Detailing Manual. For structural steel framing, provide a column schedule complete with design loads at splices, if any, and at column bases, plus a tabulation of the loads, shears, moments and/or axial loads to be resisted by the beams and their connections.

3.7.6.1.# Equipment Loads

All equipment loads which exceed 80 kg and are not supported by concrete slab-on-grade, shall be identified on the drawings by showing equipment locations, total weights, and reaction loads at support points.

3.7.6.1.# Notes

3.7.6.1.# Design Notes

Under the heading "Designer's Notes," the structural drawings shall contain notes which begin:

"The structural design was prepared using the following data:".

The data then listed shall include the structural loading criteria used for design, such as roof and floor live loads, snow load design parameters, wind speed and wind load design parameters, seismic design parameters (Zone Z, I, Rw, C, and S values), allowable soil bearing pressures (as recommended by the foundation analysis), foundation design depth, design wind uplift pressures for steel joists and other data pertinent to future

alterations. Also, to be listed are the ASTM designations and stress grades of the applicable structural materials: steel, masonry, concrete for each usage, reinforcing bars, and bolts.

3.7.6.1.# General Notes

Other notes, which direct the work to be performed, the materials to be used, etc., shall be grouped under the heading of "General Notes." Included in these notes should be a description of the building's structural system, if necessary.

3.7.6.2 Specifications

Technical specifications for final design shall be prepared in accordance with the instructions provided in this and Section 01015 DESIGN REQUIREMENTS AFTER AWARD and in paragraph "TECHNICAL SPECIFICATIONS." The technical specifications shall be complete and fully coordinated with the drawings. Special sections shall be prepared to cover those items for which no pattern guide specification is available. The "Notes to the Designer" that accompany the guide specifications shall be used in editing the technical specifications. All specification indexes shall be completely edited to reflect the paragraphs retained in the body of the specification. All references that have not been used in the body of the specification shall be edited from the technical specification.

3.7.6.3 Design Analysis

The final design analysis narrative shall repeat and expand upon the basic information presented in the 50% design analysis narrative, and shall be corrected to reflect revisions made for the final design.

3.7.6.4 [Enter Appropriate Subpart Title Here]
3.7.6.4 Design Analysis Calculations

Calculations shall be prepared by an registered professional structural engineer and shall include an investigation of loading, (gravity, wind, seismic, and allowance for future loads, etc.) shear, moment, stress analysis diagram, uplift, stability and deflection calculations. The computations are to be systematic and accurate. Similar beams, columns, or connections may be grouped by designing the largest member or connection in the group, but every individual slab, beam, column, footing, connection or other structural member or structural consideration indicated by the plans shall be accounted for by pertinent calculations, statement or reasoning, or reference to source. Design formulas shall be written out in symbols the first time each is used, before the numerical values are supplied. All answers shall be identified by dimensional units. Basic assumptions of loads, working stresses, and methods of analysis must appear in the calculations; these assumptions must be applied consistently to a given problem. The calculations shall be presented in a clear and legible form, incorporating a title page, table of contents, and a tabulation showing all design loads and conditions. Pages shall be numbered consecutively and identified in the table of contents. Cross referencing shall be clear. The source of loading conditions, formulas, and references will be identified. Assumptions and conclusions will be explained. Superseded areas of computations must be ruled out. All computations shall be given a complete numerical and theoretical check within the Contractor's office. Calculation sheets shall carry the names or initials of the developer and the checker, and the dates of calculations and checking. No portion of the design calculations shall be developed and checked by the same individual.

3.7.6.4.# Computer Calculation Submittals

All applicable input and output data shall be included in readable printed form as part of the design calculations. Continuous paper such as that used in computer terminals or printers shall be cut into individual pages and shall not be submitted in a continuous roll form. All input and output data shall include a brief synopsis of the computer program(s) stating required input, method of solution, approximations used, codes and specifications used, output generated, extent of previous usage or certification of the program(s), and program author(s). Generalized flow chart(s) may be used to supplement description of solution process, if desired. All computer generated and long-hand calculation sheets shall be identified by sheet number, indexing and cross-referencing. Each member or structure being analyzed shall be identified, dimensioned and shown in a loading diagram. A separate diagram shall be provided for each load case, such as dead plus live, dead plus wind, etc. Input and output values including intermediate values shall clearly be identified if such values are necessary for evaluation of the submittal.

3.7.7 MECHANICAL

The 100 percent final design submittal shall include all the information presented in the 50 percent submittal, updated to final design status, corrected to reflect any changes made in response to review comments, and shall include the additional requirements specified hereinafter. Any concerns in developing the final design documents shall be resolved prior to starting the final design stage.

3.7.7.1 Design Drawings

The final design drawings shall be fully coordinated with the design analysis and specifications. Provide sufficient plans, piping diagrams and isometrics, mechanical room sections, water and air flow diagrams, details, schedules, control diagrams, sequences of operation, etc., as necessary to define the design requirements. Large-scale plans of congested areas shall be provided. Coordinate with architectural design for provision of access panels for all concealed valves, traps and air vents, etc. Floor plans shall use the architectural floor plans as a basis, with the building outline half-toned. The final design drawings shall include all the requirements and drawings defined for the 50 percent submittal. In addition, the following new drawing requirements and drawings shall be provided:

a. Mechanical Abbreviation, Legend, and General Notes Sheet

On this sheet, include any mechanical general installation notes that may be required to clarify the construction intent that may not be readily apparent in the specifications or on the drawings. General notes may be provided on a separate sheet if space does not exist on the Abbreviation and Legend sheet.

b. Plumbing Drawings

Enlarged Toilet Room Plans: Enlarged toilet room plans showing all fixtures, water, waste, and vent piping shall be provided for each toilet area. Enlarged plans shall be drawn at a minimum 1:25 scale.

Plumbing Riser Diagrams: Plumbing water and Waste/Vent riser diagrams

shall be provided for each toilet area. Riser diagrams shall be located on the same sheet as the respective enlarged toilet room plans.

c. Mechanical HVAC Drawings

Mechanical Room Sections: For each air handling unit within the mechanical room, a mechanical room section view shall be provided showing, but not limited to, all AHU components, ductwork connections/routing, and relationship to adjacent structural features.

3.7.7.2 Technical Specifications

The submitted 50 percent technical guide specifications shall be updated, completely edited, and fully coordinated with the drawings to accurately and clearly identify the final product and installation requirements for the facility.

3.7.7.3 Design Analysis

The Final Design Analysis Narrative shall include the information presented in the 50 percent submittal, shall be corrected to reflect changes in content made in response to review comments, and shall be expanded to reflect the completed design.

3.7.7.4 Design Analysis Calculations

The Final Design Analysis calculations shall be performed by a registered professional mechanical engineer, and shall include all the information presented in the 50 percent submittal, shall be corrected to reflect changes in content made in response to review comments, and shall be expanded to reflect the completed design. In addition, the following new calculations shall be provided:

a. Individual Air-Conditioning Loads for each room.

b. Pipe sizing calculations for the hot water, chilled water cooling tower water systems.

c. Hot water, chilled water, cooling tower water pump head calculations.

d. Hot water expansion tank sizing.

e. Control Valve CV calculations.

f. Static pressure drop calculations for all duct systems.

3.7.8 ELECTRICAL

The 100 percent final design submittal shall include all the information presented in the 50 percent submittal, updated to final design status, corrected to reflect any changes made in response to review comments. It shall include the additional requirements specified hereinafter. Any concerns in developing the final design documents shall be resolved prior to starting the final design stage.

3.7.8.1 Drawings

The final design drawings shall be fully coordinated with the design analysis and specifications. Provide sufficient plans, electrical and UPS

room sections, single-line diagrams, details, schedules, etc., as necessary to define the design requirements. Coordinate the electrical and communications design with the design for other disciplines. Floor plans shall use the architectural floor plans as a basis, with the building outline half-toned. The final design drawings shall include all the requirements and drawings defined for the 50 percent submittal. Drawing scale shall match architectural drawing requirements. Plans shall be legible at full-size. Drawings shall include the following:

a. Electrical Legend

Describe and/or define the electrical and communications symbols used in the plans.

b. Electrical Abbreviations

Define abbreviations used on the electrical plans (may be included in the electrical legend).

c. Drawing Notes

Generally identified by a numerical label to further clarify or describe the design or design engineer's intent.

d. One-Line Diagram

Detail the complete electrical system with a simplified one-line diagram. The diagram shall show ratings of major equipment including short circuit ratings.

e. Riser Diagram

Illustrate the electrical equipment locations.

f. Power Plan

Detail the electrical wiring for outlets other than lighting. Identify rooms by name and number.

g. Power Cable Tray Plan

Detail the electrical wiring and non- lighting wall and raised floor receptacles.

h. Communications Cable Tray Plan

Detail the underfloor communications cable tray components, outlets, and routing.

i. Lighting Plan

Detail the electrical wiring and switching for lighting. Identify rooms by name and number.

j. Lighting Fixture Schedule

Detail the lighting fixture types to be provided.

k. Panelboard and PDU Schedules

Detail the circuits and circuit breakers or fuse locations in various panelboards, including panelboards in power distribution units (PDUs). Panelboard schedules shall include the designation, location, mounting (flush or surface), number of phases and wires, voltage, capacity and total connected and demand load. Indicate the trip rating, frame size, interrupting rating and number of poles for each circuit breaker in the panelboards. List the circuit number, circuit description and load for each branch circuit. Include estimated maximum demand for each panel and for entire building and other relative information which will help clarify questionable items on the plans and specifications.

l. Emergency Systems

Detail electrical requirements for emergency systems such as emergency lighting, emergency generators and UPS.

m. Site Plan

Detail the connection to switchgear, vaults, and underground electric and communications duct routes. Show utilities the underground electric lines and communications ducts will cross.

n. Communications System

Detail audio/visual requirements such as intercoms, cable TV, or computer data.

o. Security System

Detail security camera, alarm requirements and riser diagram.

p. Lightning Protection System

As a minimum show locations of all air terminals, roof conductors, down conductors, ground rods, and counterpoise.

r. Grounding System

Detail grounding electrode locations, grounding conductors and bond locations and types.

s. Cathodic Protection System

Detail test points, sacrificial anode systems, impressed current systems, etc.

t. Miscellaneous Details

Provide communications manhole details, electric vault details, special light fixture details, etc.

3.7.8.2 Specifications

All 50 percent specifications shall be completely edited and fully coordinated with the drawings to accurately and clearly identify the product, installation requirements, and testing methods for this facility.

3.7.8.3 Design Analysis

The text of the preliminary design analysis shall be expanded to reflect the completed design. Calculations used to develop the design shall be included. The document in its final form should conform in all applicable respects to the requirements of Division 16 technical requirements.

3.7.8.4 Design Analysis Calculations

Backup data shall be furnished to support basic design decisions related to sizing of major equipment and materials, selection of economic alternatives, performance of specific systems or equipment. Calculations shall be performed by a registered professional electrical engineer and may be performed by manual or computerized procedures. Use of standardized charts, curves, tables, graphs will generally be acceptable for portions of required calculations or in lieu of specific calculation procedures. Such data must be from a recognized source which is identified in the design analysis. If possible, a copy of applicable sheets or pages should be included with the calculations. For given equipment, the calculations must conform to requirements identified under subsequent paragraphs herein pertaining to the equipment.

Contractor shall verify and coordinate all electrical equipment ratings to be used in the new project (new or existing) for compatibility as to amps interrupting capacity (AIC) and short-circuit current available for a complete and operational system. As a minimum the following shall be submitted:

a. Service

Sizing of building service (technical and utility).

b. Transformers

Sizing of general purpose dry type transformers. (Generally 1 or 2 samples of detailed calculations to identify the method are sufficient, if input data for remaining units can be derived from panel or feeder sizing data.)

c. Feeders and Branch Circuits

Sizing of feeders and branch circuits (including motor circuits). (One detailed sample calculation is sufficient to establish the procedure, remaining data can be in schedules, tables, etc.).

d. Panelboards

Sizing and loading of panelboards and distribution equipment.

e. Voltage drop determination

Provide voltage drop calculations in accordance with IEEE 241 to demonstrate that the voltage drop requirements of NFPA 70 are satisfied.

f. Illumination calculations

Data shall identify target and calculated illumination levels for all rooms and areas. Calculations shall be adjusted to compensate for special applications -- irregularly shaped rooms, open sides, ceiling obstructions (beams, ductwork), corridors, etc. If the lumen method is used for

corridor calculations, the calculations shall be performed using a module in which the length doesn't exceed 3 times the width (2:1 ratio preferred).

g. Short Circuit Evaluation

By Registered Electrical Professional Engineer. Calculate the fault current in accordance with IEEE 242 for each node in the electrical distribution system.

h. Protective Coordination Analysis

Perform a protective coordination study to show that the power system is selectively coordinated and is fully coordinated with the upstream fuses in the S&C switchgear. The protective coordination / short circuit study shall be complete and accepted by the Government before any changes are make to the existing equipment. The protective coordination / short circuit study shall be performed per N.E.T.A. Acceptance Testing Specifications, Section 6.

i. Specialized Applications

Additional engineering backup shall be included to address special requirements such as accommodation of nonlinear loads, harmonics analysis, energy studies, lightning protection, cathodic protection, cable tray sizing (both electric and COMMO), etc.

3.7.9 FIRE PROTECTION

The 100 percent final design submittal shall include all the information presented in the 50 percent submittal, updated to final design status, corrected to reflect any changes made in response to review comments, and shall include the additional requirements specified hereinafter. Any concerns in developing the final design documents shall be resolved prior to starting the final design stage.

3.7.9.1 Design Drawings

The final design drawings shall be fully coordinated with the design analysis and specifications. Provide sufficient plans, diagrams, sections, details etc., as necessary to define the design requirements. The final design drawings shall include all the requirements and drawings defined for the 50 percent submittal.

3.7.9.2 Technical Specifications

The submitted 50 percent technical guide specifications shall be updated, completely edited, and fully coordinated with the drawings to accurately and clearly identify the final product and installation requirements for the facility.

3.7.9.3 Design Analysis

The Final Design Analysis Narrative shall include the information presented in the 50 percent submittal, shall be corrected to reflect changes in content made in response to review comments, and shall be expanded to reflect the completed design.

3.7.9.4 Design Analysis Calculations

The Final Design Analysis calculations shall include all the information presented in the 50 percent submittal, shall be corrected to reflect changes in content made in response to review comments, and shall be expanded to reflect the completed design. Calculations shall be performed by a registered mechanical engineer.

3.7.10 ENVIRONMENTAL

The following items shall be developed and provided by the Contractor for the 100% submittal:

Results of Environmental Survey Data:

Contractor shall complete and provide Environmental survey data collected in accordance with the approved Environmental survey sampling plan for Government review. Contractor shall perform survey in accordance with Section: 01550 - Environmental Survey Requirements.

Plans and Specifications for removal of hazardous material in Building 2789

Contractor shall develop drawings for removal of hazardous material from Building 2789 prior to demolition. The drawings shall show floorplans of the building and note locations where all samples were taken. Samples shown on drawing shall be labeled as outlined in the environmental survey sampling plan. Laboratory results of samples taken shall also be located on the drawings. In addition, drawings shall reflect quantities of hazardous materials to be removed. Drawings shall meet the format requirements described earlier in this section and be 100 percent complete.

Contractor shall also be required to review and complete technical sections of specifications for removal of hazardous materials. This includes Section 02051 - REMOVAL, RECYCLING AND DISPOSAL OF REGULATED MATERIALS, Section 13280 - ASBESTOS REMOVAL, and Section 13281 - LEAD HAZARD CONTROL ACTIVITIES.

For editing Section 13280 - ASBESTOS REMOVAL specification, the Contractor, at the least, will be required to determine class of asbestos removal and response actions needed based on results of sampling survey. (See Paragraph 1.3 DESCRIPTION OF WORK, Paragraph 3.16.12 CLASS I ASBESTOS WORK RESPONSE ACTION DETAILS SHEET, Paragraph 3.6.13 CLASS II ASBESTOS WORK RESPONSE ACTION DETAILS SHEET of the specification for further review.)

For editing Section 13281 - Lead Hazard Control Areas specification, the Contractor, at the least, will be required to determine any equipment and expendable supplies required, lead hazard control areas, system control barriers, and final clearance procedures based on the results of the sampling survey. (See Paragraph 1.19 MATERIALS AND EQUIPMENT, Paragraph 1.21 EXPENDABLE SUPPLIES, Paragraph 3.2.5 ENGINEERING CONTROLS and CONTAINMENT STRUCTURES, Paragraph 3.2.6 Building Ventilating Systems and Paragraph 3.5.2 FINAL CLEARANCE PROCEDURES of the specification for further review.)

Both plans and specifications shall be 100 percent complete to be used as final contract documents in demolition of building 2789 and will become part of the as-built package to be developed by the Contractor.

Design Analysis

The Contractor shall prepare a Chapter in the Design Analysis entitled: "Environmental Protection Compliance". Include revisions, as required, from the 50 percent design submittal.

3.8 **ATTACHMENTS**

Attachments A, B, and C follow this page.

3.8.1 **ATTACHMENT A**

CODE ANALYSIS

UNIFORM BUILDING CODE (UBC) AND NFPA "LIFE SAFETY CODE" ANALYSIS

LIFE SAFETY AND FIRE PROTECTION IS AN INTEGRAL PART OF EVERY FACILITY DESIGN. RECOGNIZED CODES AND ACCEPTED SAFETY STANDARDS SHALL BE FOLLOWED IN THE DESIGN OF ALL FACILITIES. OF THE VARIOUS CODES AND SAFETY STANDARDS THE NATIONAL FIRE PROTECTION ASSOC. (NFPA) "LIFE SAFETY CODE" SHALL TAKE PRECEDENCE. ALL APPLICABLE REQUIREMENTS OF THE LIFE SAFETY CODE SHALL BE INCORPORATED INTO EACH DESIGN. FOR TYPE OF CONSTRUCTION, FIRE AREA LIMITATIONS, AND ALLOWABLE BUILDING HEIGHTS THE DESIGN SHALL FOLLOW THE UNIFORM BUILDING CODE (UBC).

CHECK LIST

PROJECT NAME _____ DATE_____

LOCATION _____

3.8.1.1 UNIFORM BUILDING CODE ANALYSIS

3.8.1.1.# OCCUPANCY CLASSIFICATION (See Table 5A):

Area:	Classification:
(GROUP: _____):	Div. _____
(GROUP: _____):	Div. _____
(GROUP: _____):	Div. _____

PRINCIPAL OCCUPANCY _____

OTHERS (SPECIFY) _____
_____
_____
_____

3.8.1.1.# TYPE OF CONSTRUCTION :

_____

3.8.1.1.# OCCUPANCY SEPERATION REQUIRED (SEE TABLE 5-B):

_____ TO _____ = _____ HRS
_____ TO _____ = _____ HRS
_____ TO _____ = _____ HRS
_____ TO _____ = _____ HRS
_____ TO _____ = _____ HRS

3.8.1.1.# FIRE RESISTANCE OF EXTERIOR WALLS: (SEE TABLE 5-A)

NORTH _____

SOUTH _____
EAST _____
WEST _____
OTHER _____

3.8.1.1.# OPENINGS IN EXTERIOR WALLS: (SEE TABLE 5-A)

NORTH _____
SOUTH _____
EAST _____
WEST _____
OTHER _____

3.8.1.1.# MAX. ALLOWABLE FLOOR AREA (SEE TABLE 5-C):

ALLOWABLE:

IF SPRINKLERED: _____

ALLOW. AREA INCREASES _____
_____
_____
_____
_____

CALCULATED ACTUAL FLOOR AREA:

Floor Square Footage

Totals:

3.8.1.1.# MAX. ALLOWABLE HEIGHT (SEE TABLE 5-D):

METERS (FEET): _____
STORIES: _____

Proposed Height of Building: _____

Actual No. of Stories: _____

3.8.1.1.# COMMENTS:
_____
_____
_____
_____
_____

DESIGNER:_____

3.8.1.2 NFPA 101 "LIFE SAFETY CODE"

3.8.1.2.# CLASSIFICATION OF OCCUPANCY:

_____

_____

HAZARD OF CONTENTS:

LOW _____

_____

_____

ORDINARY _____

_____

_____

HIGH _____

_____

_____

3.8.1.2.# FIRE RESISTIVE REQUIREMENTS:

EXTERIOR WALLS: _____ HRS _____

INTERIOR WALLS: _____ HRS _____

STRUCTURAL FRAME: _____ HRS _____

VERTICAL OPENINGS: _____ HRS _____

FLOORS: _____ HRS _____

ROOFS: _____ HRS _____

EXTERIOR DOORS: _____ HRS _____

EXTERIOR WINDOWS: _____ HRS _____

BOILER ROOM ENCLOSURE _____ HRS _____

OTHER (LIST) _____ HRS _____

_____ HRS _____

_____ HRS _____

_____ HRS _____

3.8.1.2.# MEANS OF EGRESS:

OCCUPANCY LOAD FACTOR: _____

OCCUPANCY	FACTOR	ACTUAL AREA	ACTUAL LOAD
_____			

3.8.1.2.# NUMBER OF EXITS REQUIRED:

3.8.1.2.# MINIMUM WIDTH OF EXITS:

CALCULATED:

ACTUAL:

3.8.1.2.# MAXIMUM ALLOWABLE TRAVEL DISTANCE TO EXIT:

WITH SPRINKLERS:

3.8.1.2.# EXIT DOORS:

MINIMUM WIDTH ALLOWED:
MAXIMUM LEAF WIDTH ALLOWED:
WIDTH REQUIRED FOR NO.OF OCCUPANTS:

3.8.1.2.# EXIT CORRIDORS:

MAX. COMMON PATH OF TRAVEL:
MINIMUM ALLOWABLE WIDTH:

REQUIRED TO HAVE EXIT AT EACH END OF CORRIDOR?
_____
DEAD END CORRIDORS ALLOWED? _____
MAXIMUM LENGTH: _____
WALL FIRE RESISTANCE REQUIRED: _____
_____
_____
DOORS & FRAME FIRE RESISTANCE REQUIRED:
_____
_____

3.8.1.2.# STAIRS:

MINIMUM WIDTH _____ FOR OCCUP. LOAD OF _____
MINIMUM WIDTH _____ FOR OCCUP. LOAD OF _____
MINIMUM WIDTH _____ FOR OCCUP. LOAD OF _____
MINIMUM WIDTH _____ FOR OCCUP. LOAD OF _____
MAX. RISER ALLOWED: _____
MINIMUM TREAD ALLOWED: _____

LANDINGS:

MIN. SIZE: _____
MAX. VERTICAL DIST. BETWEEN LANDINGS: _____
_____
_____
REQUIRED HEIGHT OF RAILINGS:
_____
_____
HANDRAILS:

REQUIRED AT EACH SIDE? _____
INTERMEDIATE RAIL REQUIRED? _____

HEIGHT ABOVE NOSING _____
INTERMEDIATE RAIL REQUIRED? _____
MAX. SPACE ALLOWED BETWEEN RAILS: _____
_____

STAIR ENCLOSURE REQUIRED?_____

STAIR TO ROOF REQUIRED?_____

STAIR TO BASEMENT REQUIRED? _____

3.8.1.2.# HATCHWAY ACCESS TO ROOF REQUIRED? _____

3.8.1.2.# LADDER ACCESS TO ROOF REQUIRED?

_____

3.8.1.2.# HORIZONTAL EXIT REQUIREMENTS:

_____
_____
_____

3.8.1.2.# PROTECTION OF OPENINGS NEAR EXTERIOR STAIR EXIT DOORS:

_____
_____

3.8.1.2.# SMOKEPROOF ENCLOSURE REQUIRED:
_____

_____

3.8.1.2.# RAMPS:

MAX. SLOPE TO USE AS EXIT _____
HANDRAILS REQUIRED? _____

3.8.1.2.# COMMENTS:
_____
_____
_____
_____
_____
_____

DESIGNER: _____

FOLLOWING IS A LIST OF ADDITIONAL "NFPA" CODES THAT ARE COMMONLY USED. INDICATE WHICH OF THESE CODES ARE USED AND ADD THOSE REQUIREMENTS TO THIS ANALYSIS.

MIL HDBK-1008C	FIRE PROTECTION FOR FACILITIES, ENGR, DESIGN, AND CONSTRUCTION.
NFPA 10	FIRE EXTINGUISHERS, PORTABLE
NFPA 75	COMPUTER/DATA PROCESSING FACILITIES
NFPA 80	FIRE DOORS AND WINDOWS
NFPA 88A	PARKING STRUCTURES
NFPA 409	AIRCRAFT HANGARS
AFM 88-4	DATA PROCESSING FAC. DESIGN AND CONST.
AF ETL 89-3	FIRE PROTECTION CRITERIA FOR ELECTRONIC

[Typed Name and Signature of the
Licensed Architect/Engineer of Record]
[Professional Seal of the Licensed Architect/Engineer of Record]

3.8.2 **ATTACHMENT B**

ADA ARCHITECTURAL DESIGN CHECKLIST

Project Name:_____
Project Location:_____
Design Phase:_____

ITEM NO.		INCORP	N/A	LATER
1.	Established with the Base/owner of the facility the requirements for handicap accessibility.	____	_____	_____
2.	Received a waiver for no handicap accessibility requirements on the facility.	_____	_____	_____
3.	Facility is designed utilizing:			
	New Construction Criteria	_____	_____	_____
	Building Alteration Criteria	_____	_____	_____
	Historic Building Preservation Criteria:	_____	_____	_____
4.	Accessible Route (egress/corridors/halls/aisles).			
	- Provided minimum fire egress routes.	_____	_____	_____
	- Provided minimum site accessible routes.	_____	_____	_____
	- Provided proper clearance widths.	_____	_____	_____
	- Provided proper floor level changes.	_____	_____	_____
	- Provided proper floor materials.	_____	_____	_____
	- Provided protection from protruding objects.	_____	_____	_____
5.	Ramps:			
	- Maximum slopes less than 1:12	_____	_____	_____
	- Maximum run less than 30 feet for 1:12 slopes 40 feet for 1:16 slopes	_____	_____	_____
	- Minimum clear width exceeds 36-inches.	_____	_____	_____
	- Provided proper edge protection.	_____	_____	_____
	- Provided handrails of proper configuration and diameter.	_____	_____	_____
	- Provided proper handrail extensions at top and bottom of ramp.	_____	_____	_____
	- Provided handrails at proper mounting heights.	_____	_____	_____
	- Provided proper landings.	_____	_____	_____
	- Provided proper cross slope on ramp surface.	_____	_____	_____

ITEM NO.	INCORP N/A	INCORP LATER	
6. Stairs:			
- Protected the space below stairs from access by the blind.	_____	_____	_____
- Provided handrails of proper configuration and diameter.	_____	_____	_____
- Provided proper handrail extensions at top and bottom of stairs.	_____	_____	_____
- Provided handrails at proper mounting heights.	_____	_____	_____
- Provided treads greater than 11-inches in width.	_____	_____	_____
- Provided Proper nosings.	_____	_____	_____
7. Elevators:			
- Provided buttons and lanterns at the proper mounting height.	_____	_____	_____
- Provided Braille characters.	_____	_____	_____
- Provided proper door widths.	_____	_____	_____
- Provided proper clearance inside elevator car.	_____	_____	____
8. Doors And Hardware:			
- Provided proper door widths.	_____	_____	_____
- Provided proper clearance on both sides of jambs.	_____	_____	_____
- Entrance vestibules provided with adequate clearances.	_____	_____	_____
- Provided levers on locksets and exit hardware.	_____	_____	_____
- Provided closers with mechanical adjustments.	_____	_____	_____
- Provided accessible thresholds.	_____	_____	_____
- Provided protection plates on doors heavily used by wheel chair bound people.	_____	_____	_____

ITEM NO.		INCORP	N/A	LATER
9.	Toilet Facilities:			
	- Provided proper floor clearance through out the toilet rooms.	_____	_____	_____
	- Provided minimum number of required accessible fixtures.	_____	_____	_____
	- Provided accessible toilet stalls.	_____	_____	_____
	- Provided stall doors with correct direction of swing.	_____	_____	_____
	- Provided accessible water closets.	_____	_____	_____
	- Provided grab bars at accessible water closets.	_____	_____	_____
	- Provided grab bars with correct configuration and dimension.	_____	_____	_____
	- Provided accessible sinks/lavatories.	_____	_____	_____
	- Provided accessible urinals.	_____	_____	_____
	- Provided accessible water coolers and fountains.	_____	_____	_____
	- Provided accessible mirrors.	_____	_____	_____
	- Provided accessible toilet accessories at required locations.	_____	_____	_____
	- Provided all fixtures and accessories at proper mounting heights and clearances.	_____	_____	_____
	- Provided insulated or protected exposed pipes at lavatories.	_____	_____	_____
10.	Shower/Tub Facilities:			
	- Provided the minimum number of accessible showers/tubs.	_____	_____	_____
	- Provided showers/tubs with grab bars.	_____	_____	_____
	- Provided showers/tubs with seats as required.	_____	_____	_____
	- Provided controls mounted at the proper height and location.	_____	_____	_____
	- Provided proper clearances and dimensions in showers/tubs.	_____	_____	_____
	- Provided proper floor clearance through out shower/tubs rooms.	_____	_____	_____
	- Provided doors with correct direction of swing and clearance.	_____	_____	_____

ITEM NO.		INCORP	N/A	LATER
11.	Storage:			
	- Provided accessible cabinets, shelves, closets, and drawers as required.	_____	_____	_____
	- Provided proper clearance, mounting heights, and reach provisions.	_____	_____	_____
12.	Telephones and Vending:			
	- Provided the minimum number of required accessible public telephones.	_____	_____	_____
	- Provided proper floor clearance around telephone.	_____	_____	_____
	- Phone and controls mounted at proper heights and within reach.	_____	_____	_____
	- Provided vending machines on an accessible route.	_____	_____	_____
	- Provided vending machines with accessible clearances and protruding object safe guards.	_____	_____	_____
13.	Fixed Or Built-in Seating And Tables:			
	- Provided the minimum number of accommodations for accessibility in areas which required fixed furniture.	_____	_____	_____
	- Provided proper floor clearance around furniture.	_____	_____	_____
	- Provide proper knee space at tables.	_____	_____	_____
	- Provided tables and counters with proper top surface heights.	_____	_____	_____
14.	Assembly Areas:			
	- Provided the minimum number of accessible seating spaces.	_____	_____	_____
	- Provided seating which is easily accessible to emergency egress.	_____	_____	_____
	- Provided companion seating.	_____	_____	_____
	- Integrated and dispersed accessible seating with the rest of the seating.	_____	_____	_____
	- Provided accessible dressing rooms.	_____	_____	_____
	- Provided level floor surface at accessible seat locations.	_____	_____	_____
	- Provided clear ground or floor space at accessible seat locations	_____	_____	_____
	- Provided access to all performing areas and associated spaces.	_____	_____	_____

ITEM NO.		INCORP	N/A	LATER
15.	Dining Halls And Cafeterias:			
	- Provided the minimum number of accessible dining spaces.	_____	_____	_____
	- Provided accessible counters and bars.	_____	_____	_____
	- Provided accessible aisles between tables or walls.	_____	_____	_____
	- Provided clear floor space at accessible dining locations.	_____	_____	_____
	- Provided accessible food service lines meeting minimum clearances and reaches.	_____	_____	_____
	- Provided accessible tableware and condiment areas.	_____	_____	_____
	- Provided raised speaker platform with protected edges.	_____	_____	_____
16.	Medical Care Facilities:			
	- At least 10% of the general patient rooms are accessible.	_____	_____	_____
	- Provided the number of accessible patient rooms as required for specialized treatment,long term care, or alterations of existing patient rooms.	_____	_____	_____
	- Provided at least one accessible entrance with weather protecting canopy or roof overhang.	_____	_____	_____
	- Provided minimum clearances within the patient rooms and around the beds.	_____	_____	_____
	- Provided accessible patient toilet/bath rooms.	_____	_____	_____
17.	Business And Mercantile:			
	- Provided at least one accessible sales counter, services counter, teller, information window, etc.	_____	_____	_____
	- Security bollards when provided, do not prevent access or egress to people in wheel chairs.	_____	_____	_____
18.	Libraries:			
	- Provided access to all reading and stack areas, reference reference rooms, reserve areas, and special facilities or collections.	_____	_____	_____
	- Provided at least 5% or a minimum of one of each element or fixed seating, tables, or study carrels as accessible	_____	_____	_____
	- Provided at least one lane of check out areas as accessible.	_____	_____	_____
	- Provided adequate clearance and reach distances at card catalogs and magazine displays.	_____	_____	_____
	- Provide stacks with minimum clear aisle width.	_____	_____	_____

ITEM NO.		INCORP	N/A	LATER
19.	Temporary Lodging:			
	- All common and public use areas are accessible.	_____	_____	_____
	- Provided accessible units, sleeping rooms, and suites.	_____	_____	_____
	- Provided sleeping accommodations for persons with hearing impairments.	_____	_____	_____
	- Provided a dispersed class and a range of room options.	_____	_____	_____
	- Provided accessible rooms in ADAL projects.	_____	_____	_____
	- Provided an accessible route to accessible sleeping rooms.	_____	_____	_____
	- Provided accessible clearance widths within sleeping rooms and around beds.	_____	_____	_____
	- Provided accessible doors within accessible sleeping rooms.	_____	_____	_____
	- Provided accessible fixed or built-in furniture and storage units.	_____	_____	_____
	- Provided accessible controls throughout accessible units.	_____	_____	_____
	- Where provided as part of an accessible unit each of the following were provided as accessible: living area, dining area, at least one sleeping area, patio/terrace, balcony, toilet/bath, and carport/garage/parking.	_____	_____	_____
	- Where provided as apart of an accessible unit, the kitchen, kitchenettes, wet bars, or similar amenities were also provided with accessible features.	_____	_____	_____
	- Provided visual alarms, notification devices, and accessible telephones.	_____	_____	_____
	- Provided accessible doors and doorways designed to allow passage into and within all sleeping units or other covered units.	_____	_____	_____

20. Transportation Facilities:

(This section covers Air, Rail, and Bus public transportation facilities. See Section 10 of the ADA Guide for specific requirements for these facilities)

3.8.3 **ATTACHMENT C**

MECHANICAL ROOM SIZE FORM

****

NOTE: Mechanical Systems Design Documents and Guides - Mechanical Room Size Form

At the final design stage, the mechanical designer shall fill out this Mechanical Room Size Form and include it in the final design calculations.

****

The information submitted on this sheet shall be placed in a data base for future use on similar DoD, COE project. (The data base shall be used to help determine appropriate mechanical room sizes). Include this sheet in the final design calculations.

Project:

Location:

Engineer:

Gross floor area of building:

Gross square footage includes (the entire building) stairs, corridors, etc.

Floor area of mechanical room:

Percent of gross building area is the mechanical room size:

Type of facility:

Sources of energy (E, G, S):

Mechanical equipment:

List of equipment outside the mechanical room and location:

Is the mechanical room too small?

Does the User think the mech room is too small? (Y, N, Don't know)

Additional remarks:

Abbreviations:

AC - air compressor
AHU - air handling unit
B - boiler
CU - air cooled condensing unit
DF - direct fired
DX - direct expansion chilled water heat exchanger

E - electric
FC - fan coil unit
FP - fire protection
G - natural gas or propane
HX - heat exchanger
LC - liquid chiller
MUA - make up air unit
UH - unit heater
ST - domestic hot water storage tank
S - steam

-- End of Section --